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OFFICIAL REPORT

OF THE

Eighteenth Fruit Growers' Convention

OF THE

STATE OF CALIFORNIA

1894

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OFFICIAL REPORT

OF THE

EIGHTEENTH FRUIT GROWERS' CONVENTION

OF THE

STATE OF CALIFORNIA,

Held under the Auspices of the State Board of Horticulture, at
Sacramento, commencing Tuesday, November 20, and
ending Friday, November 23, 1894.

SACRAMENTO:
STATE OFFICE, : : : : : A. J. JOHNSTON, SUPT. STATE PRINTING.
1895.

SB354
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STATE BOARD OF HORTICULTURE.

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ALEXANDER CRAW .... Quarantine Officer and Entomologist.
ELLA F. HALLAHAN .... Clerk.

OFFICES:
No. 220 Sutter Street, San Francisco, Cal.

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SYNOPSIS OF THE PROCEEDINGS

OF THE

EIGHTEENTH STATE FRUIT GROWERS' CONVENTION

HELD UNDER THE AUSPICES OF THE

STATE BOARD OF HORTICULTURE.

SACRAMENTO, NOVEMBER 20-23, 1894.

Pursuant to call, a convention of fruit growers, shippers, packers, nurserymen, and others interested in horticulture and kindred pursuits in California, assembled in convention in the Assembly Chamber of the State Capitol.

OPENING EXERCISES.

Hon. L. W. Buck, Vice-President of the State Board of Horticulture, called the convention to order promptly at 10 o'clock and explained the object of the meeting.

Rev. T. H. B. Anderson, of Sacramento, opened the proceedings with prayer, asking God's blessing upon the proceedings, and that they might be productive of good to the country.

VICE-PRESIDENTS.

Mr. R. D. Stephens, of Sacramento, and Mr. P. J. Shields, of Routiers, were elected Vice-Presidents by acclamation.

ASSISTANT SECRETARY.

Mr. Edwin F. Smith, of Sacramento, was chosen Assistant Secretary.

ADDRESS OF WELCOME BY GOVERNOR MARKHAM.

Governor H. H. Markham was escorted to the Speaker's stand and introduced by Chairman Buck. The Governor delivered the following address of welcome:

Mr. President, Fellow Horticulturists, Ladies and Gentlemen: I did not expect to be called upon to speak to you on this occasion, and had said to your committee that I thought it would be impossible for me to be present. But when they came to me this morning and stated that it was expected that I should, on behalf of the State of California, welcome your body to this city, I could not refuse, and as Chief Executive, I now extend to you a hearty welcome to the capital of our State, and I do so, believing that you represent an interest that is of greater importance to the people of California than almost any other with which we have to deal at the present time. I shall not make you a formal speech this morning, having had no opportunity for preparation, and indeed I feel somewhat as did Mark Twain, who said that the best extemporaneous speeches he ever delivered were those where he had about two weeks' notice. [Laughter.] I have had no notice, consequently feel the need of preparation in addressing a body of such intelligence as is here assembled. And yet could I talk to you a few moments with the conviction that what I say would not be published, I might perhaps tell you some things that would prove of interest.

Your Chairman has intimated that I am a horticulturist. I am a horticulturist by proxy, and that is my trouble [laughter]; and I don't mind telling you confidentially that I believe I can convince every one of you in four minutes that I am a typical horticulturist of California. I own about three hundred acres of as good fruit land, according to my judgment, as is to be found in California. I have owned it for some time. I purchased it subject to a mortgage, and when I was in Los Angeles the other day, I had to go to the bank and borrow money to pay interest. That is the first money I ever borrowed in my life, and if you don't think I am a horticulturist now, then all I can say is, there must be something wrong with my credentials.

Seriously, my friends, I shall not assume to advise you as to the important work before your convention. It seems to me that it would be more appropriate for me to listen to your deliberations than to give expression to my own thoughts upon an occasion like this. And I can truthfully say to you, Mr. Chairman, that, notwithstanding the depressing report I have given you of my own experience, I am not discouraged as to the horticultural interest of California, for I am convinced that the difficulties with which we are now contending are merely temporary, and will give place to permanent prosperity. I would rather own that land to-day than have the money invested with any banker or political party in the country, and I will stay with it. I know that no one can take that land from me, or make it less productive; nor can any one keep my trees from growing and bearing the finest fruit upon which the sun ever shone.

We have some things to do here in California, as far as our horticultural interests are concerned, and it is for you gentlemen to show us how and by what methods we can obtain the best results from our labors. I believe that you can determine that in large measure here, and by your wise and intelligent counsels so direct the efforts of those engaged in this industry that they may secure the greatest benefits from their investments, and make their occupation a credit to our State. I am not unmindful of the fact that we in California are tempted to live upon what the Creator has prepared for us, without making any personal exertion ourselves. I have watched this tendency all over the State. If you pass through the great agricultural sections of the East, you will everywhere find the father of the family and every child at work, and not an idle person connected with the farm. And yet with all this effort, you will not find a farm of one hundred and sixty acres in the United States, east of the Rocky Mountains, however fertile, that can pay interest on its investment, pay for every hour of work performed and make a single dollar. The trouble is that people come into this State expecting to grow rich raising fruit, just as I did, by sitting in my parlor and smoking ten-cent cigars, and wondering why my hired men didn't do more work. [Laughter.] The truth is, we cannot become rich without making sacrifices. There is not a man here who will not say that he earns money enough to make him rich, but he has not the faculty of saving it. And I cannot do better than call your attention to the familiar aphorism, which is as true to-day as it was when Benjamin Franklin uttered it, that it is not what we earn, but what we save that makes us wealthy.

As I see some ladies here to-day, I will say that I have been charged with being a woman-suffragist, and such I am in this respect, that I believe girls should be taught the great practical duties of life. I am proud to say Mrs. Markham has taken care that every one of our children is taught something useful. When my eldest daughter wrote me not long ago of her progress in Latin, Greek, and French, I answered that I appreciated all that, but could understand it better if she could send me some nice bread and rolls of her own making. In reply, she sent me some of the nicest I have ever seen. My only apology for mentioning this is that you may understand what I conceive to be the proper kind of education for our girls, which is that they should not only have accomplishments, but should also be equipped with useful and practical knowledge, which in this age is almost indispensable.

I started in life without a dollar. I have never played a game of marbles, baseball, poker, or billiards in my life. I did not dare to say that when I was running for Governor, because I would have been defeated if I had made such a confession. But it is true. [Laughter.] Now, I have some faults, but I do not tell you these. I have told you some of my virtues instead. [Laughter.] I had no time to give to these diversions. And I say to the young men and women of California that they can help our State if they will be as industrious as every successful man of California has had to be.

In my speech at the World's Fair, I called attention to what California had done in the way of fruit-raising: that twelve years ago we shipped 500 carloads of canned, dried, and preserved fruits; now we send 20,500 carloads—a gain of 20,000 carloads per year in twelve years. The question for us now to determine is what to do with it. I remember very well that when I came to California, the only market we had was San Francisco, and they said to us, "If you put out a dozen trees too much you will have no market." But we have kept on planting every year, and we have a larger market than ever. I believe I can say truthfully that I shipped into Washington City the first carload of acceptable oranges that were ever sent there from this State. That was just ten years ago. When I asked why there were no California oranges there, I was told that they were sour, disagreeable, and could not be sold. That was owing to the fact that Californians had become impressed with the idea that they must force nature and send to the East unripe oranges to compete with those from Florida. When the committee which accompanied the remains of Senator Miller to California returned to Washington City, they brought me a box of oranges sent by some of my friends from Southern California. I took them to a market and asked the marketman if he had any objections to such oranges.

He said no, and informed me that he could sell a carload of that kind. I telegraphed to my ranchman to send on a carload, which was done, and they sold within two hours. But the worst of it was that the California papers credited me with giving those oranges out to the members of Congress. The fact is, they were sold so quickly that I had no chance to give them away. The reputation of California fruit is now well established. The only question is how it shall be handled. If your freights are too high you must take measures to have them reduced; and if your commission merchants are not treating you as they should, you must have that rectified, and insist on fair and equitable dealing at their hands. But if I continue in this vein I fear I will be giving you advice, and that is not my purpose. I would much rather have your views on these questions, and when I write my message to the next Legislature I will adopt them if I can. In conclusion, I thank you all for your kind and courteous attention. [Applause.]

REASSEMBLED.

On reassembling, the hospitality of the city of Sacramento was extended to all connected with the convention, in the following

REMARKS BY MAYOR B. U. STEINMAN.

Mr. Chairman, and Members of the State Fruit Growers' Convention, Ladies and Gentlemen: It affords me great pleasure to welcome you to the City of Sacramento—to our new City of Sacramento. I am glad to say that the executive committee of the citizens of Sacramento have selected a successful fruit grower to welcome you to Sacramento. He is so successful a fruit grower that he has been able to retire from fruit growing many years ago. I am happy to give place to Mr. Weinstock, who will tell what he knows about raising fruit.

ADDRESS OF WELCOME BY MR. H. WEINSTOCK.

Mr. President, Ladies and Gentlemen: It is some eight years since the State Board of Horticulture in its wisdom saw fit to select Sacramento as the meeting place of the Sixth Annual Convention of California Fruit Growers. Since that time there has been a marked growth in our city, in the attendance of your conventions, and in the development of the great industry which you represent. In 1886, when you last met here, there were shipped from the State 4,000 carloads in all, of green, dried, and canned fruits. At that time that was regarded as a phenomenal achievement, and many wiseacres expressed their belief that the limit of profitable fruit raising had been reached; and yet you and I have lived to see more than 20,000 carloads sent out of the State this one year. We have lived to see that great increase in the output within a period of but eight years. In spite of the discouraging conditions, in spite of the fact that out of the 20,000 carloads sent forward this year there were very many that did not realize satisfactory prices;

those who have carefully investigated the causes feel satisfied in their own minds that these low prices were caused not so much by over-production as by conditions that are either not likely to be repeated or that lie within the power of the fruit growers to remedy.

The men of foresight, who, in 1886, when there were but 4,000 carloads sent out of the State, prophesied that the fruit industry was still in its infancy, were met with more or less ridicule. Had it been in the power of any one at that time to foretell that in 1894, in the face of the most distressing industrial and commercial depression that the country had ever known, in the face of a most disastrous railway strike, paralyzing, at the height of the shipping season, the traffic for weeks—had it been foretold that in the face of such conditions there would be shipped from the State 20,000 carloads of fruit, the person making such statement would have been regarded as a visionary of a most profound type. And yet, if to-day many of us were told that in years to come there will be shipped from California 50,000 carloads of fruit, and shipped at a profit to the grower, we would look upon such a statement as reckless and unworthy of serious consideration. Yet many of us here assembled, though advanced in years, will live to see that day. The fruit grower is destined to be the chief foundation stone of the prosperity of this great commonwealth. [Applause.] His intelligent, enterprising industry is to prove a blessing, not only to himself but to all the people of this great State. The wealth which by skill and industry he will bring forth from our fruitful soil is to make ours the richest, the most prosperous, as well as the most cultured and enlightened among the people of this great western continent.

In welcoming you to our midst, we cannot therefore but feel that we are welcoming truly royal guests, royal in all that goes to add to the wealth and prosperity of the nation, royal in all that tends to develop the moral and mental culture of our people, and to strengthen the foundation stones upon which the State and nation rest. In welcoming you to our midst, we feel that we are welcoming guests with whom we have much in common, guests whose interests and welfare we should ever have at heart, guests who, to us, represent that yeomanry which goes to make the highest and most important element in American citizenship. We feel honored by your presence, and in behalf of the people of Sacramento it affords me pleasure to tender you a most hearty welcome, and to bespeak for you a treatment on the part of our citizens which I trust will prompt you in the future to make our city your meeting place more often than you have in the past. Let me express the hope that your discussions and deliberations may be guided by that wisdom and calm judgment which, in the coming years, will bring to your labors the highest and fullest measure of success. [Applause.]

ADDRESS OF HON. L. W. BUCK,

Vice-President Presiding.

Ladies and Gentlemen: In the absence of our esteemed President, Hon. Ellwood Cooper, it becomes my duty and pleasure to preside at this convention of horticulturists, by virtue of my position of Vice-President. This is the eighteenth State Fruit Growers' Convention, and the fourteenth held under the auspices of the State Board of Horticulture. These yearly conventions are held to enable the fruit growers of the State to come together for a general interchange of ideas on various topics connected with the fruit industry—the greatest in the State—and to discuss the best methods of advancing the same in all its branches.

The first fruit growers' convention was held in this city, on December 6, 1881—thirteen years ago. Horticulture even then began to give promise of future importance, but no one then thought that it would, in so short a time, assume the important position which the industry now occupies. A report made to the State Agricultural Society in the later sixties, says: "There are single farms in this State containing each over half a million fruit trees, in orchard and nursery—one person owning enough trees, when fully matured, to provide as much fruit, other than grapes, as will be sold this year throughout our State. The day is not far distant when fruit will be an important crop for raising and fattening swine." Notwithstanding this dolorous prediction, the orchard industry grew steadily for the next thirty years. In 1871, C. W. Reed, who for that period took a very rose-colored view of the future of fruit growing, made an address before the State Agricultural Society, in which he said: "The business of shipping green fruit should increase until we can send one thousand carloads annually from California." Mr. Reed's thousand-carload mark, the limit of his hopes, has long since been passed, and last year we exported 7,995 carloads of fresh fruit alone; and shipped of all kinds 27,326 carloads, while the shipments of the present season will far exceed this. Statistics of the Southern Pacific Company up to October of the present year show that to this date there had been an increase in the shipments of fresh fruit this year over last of 1,050 carloads, and a total increase in all kinds of fruit—fresh, canned, and dried—of 2,600 cars.

With the larger demands for our products have come lower transportation rates, more rapid transit, and improved methods of shipping, and by these means our markets are steadily widening. New and better varieties have been introduced, better methods of treatment have been followed, better and wider markets discovered, and we have conquered the entire United States and invaded England with our fresh fruits, and the entire civilized world with our dried products.

In glancing over the season just closed I hardly know whether we can congratulate ourselves or not. With the exception of prunes, which after all have turned out a passably fair crop, we have had a very large yield. Our trees have borne heavily and the fruit has been of exceptional quality. We have suffered little from insect pests or ravages, and so far as nature is concerned, taking the State as a whole, we have much to be thankful for. But with it we have had serious drawbacks. In the southern portion of the State a severe frost on January 6th swept over the citrus region and did considerable damage directly in the injury inflicted upon the fruit, but more indirectly in depreciating the price of those oranges which escaped uninjured, which dropped in value with the damaged fruit. The cherry districts suffered somewhat from late May and June rains, which came in the picking season and rendered the fruit unfit for shipment. Despite this, however, there was a very large output of cherries and the later varieties brought fair prices. Apricots have yielded a very large crop and all other fruits have done well. So far reports are encouraging, and at the opening of the season the outlook was good. There was a heavy shortage in nearly all lines in the East, and we were preparing to take advantage of the market offered us when the great strike was inaugurated, and we found ourselves with heavy crops of fine fruit on hand without means of transportation. As a result losses were very heavy, and while it is not possible to obtain exact figures, I believe that a million dollars would not make good our loss from this one cause. Much of our early fruit that should have been marketed fresh was dried, and much more was a total loss. Following this was the severe business depression that spread over the entire Union, and instead of getting the good prices that the commencement of the season promised, we did well to come out even, and many growers report heavy losses on their crops. In spite of these drawbacks, however, our shipments, as I before said, have been heavier this season than usual.

The dullness of the Eastern market led to the repetition of the experiment made some two years previously, of shipping fresh fruit to England. We profited somewhat by the mistakes of the first experiment, but until we can develop a better and cheaper system of transportation than we now have, one that will do away with the bulky refrigerator car and their additional cost for iceing and carriage, we can look upon the English market only as a last resort, in which we can dispose of our surplus fruits at a price that is better than nothing. When, however, we can deliver our fruit in less time, in better shape, and at lower cost than we now can, we may hope for a profitable market in England.

The past season has witnessed an important stride in the line of coöperation, which will eventually prove of great value to the growers, of which we are to hear during our present convention. Over the entire State fruit growers, packers, and shippers are now organized for mutual help; the citrus fruit growers have their organization, the walnut growers theirs, the raisin men theirs, the fruit driers and the fresh fruit shippers have their societies looking to the control of their own products and the finding of the best markets. I need not dwell upon the advantages of these organizations, as they are well known to all of us and will be further discussed during the course of the present convention. Suffice it, that the tendency is more and more toward coöperative action, and it can result only in good to both the producer and the consumer, for it insures to the latter abundance for his demands and to the former a sure market for his output.

There is yet another matter which unity of action can accomplish, and that is the securing of fair rates of freight and proper service from the railroads. A syndicate controlling the greater part of the fruit crop of the State is in a position to secure better terms from the railroads and to see that their agreements are carried out, while the individual grower or the small association is wholly at the mercy of the transportation companies. The small grower must pay such charges as are demanded from him. His fruit may be side-tracked and ruined in transit, and if he gets any redress it is after much time and at such cost that the first loss is preferable. This cannot happen where we are working together for our rights, and an industry that employs the services of nearly 30,000 cars annually can make itself respected if it is united.

During the year two processes for keeping fresh fruit in transit have been tried. They are very promising, and will no doubt aid us in shipping fruit to distant markets without the addition of ice. These are the "Perkins process," with which most of you are more or less familiar, and of which more will be heard before the convention adjourns, and the "carbonic acid gas process." Experiments in the latter line have been very quietly conducted, but if reports are true concerning them a very important discovery has been made. The practicability of the Perkins process has, I think, been fully demonstrated, and if either one does what is claimed for it, it means a large saving to the fruit shipper, the landing of our fruit at points of consumption in good condition, and a possibility of reaching a much larger class of consumers than is now possible.

In 1881 the Board of State Viticultural Commissioners was created and assigned to look after the interests and take necessary protective measures. An advisory Board of Horticulture was chosen by them; but viticulture had reached a stable position and was making comparatively slow progress, while horticulture was developing with great rapidity. In 1883 the State Board of Horticulture was created by law. It is hardly necessary to allude to the work of the Board since that time, for it is well known to all of you, and I believe you will agree with me in the statement that the present status of the fruit industry here is very largely due to its efforts; but I must allude briefly to a few of its labors. Our annual meetings are held under its auspices, and he is dull indeed who does not go home with some new ideas which he can turn to profit, or who is not benefited by attendance. The papers prepared for these conventions by practical fruit growers have been published in our annual reports, and reached thousands who were unable to attend, and by this means the best methods have been widely promulgated over the State and a great impetus given to the industry. It would not be doing justice to our indefatigable Secretary, Mr. Lelong, to whom so much of the success of our work is due, were I to pass the subject without giving him credit for the care with which he has discharged his arduous duties. The publications of our Board have become world-wide authority on horticultural subjects, and are sought for and quoted in both hemispheres. Besides the broadcast distribution of information, we have conducted numerous experiments, both in the cellar and in the field, which have proved successful, all of which have been given to the public in our publications.

As new insects are continually appearing, also fungi not before observed, in different countries, and trees from those countries are being imported every year into our State, and as the inroads already made by these enemies to fruit culture there are a serious loss to the growers and have made it almost impossible for them to continue the business, we have caused the inspection of every steamship arriving from foreign countries, to prevent their possible introduction into this State. During the year fully six hundred steamships and vessels have thus been inspected, and infected plants and trees numbering many millions have been destroyed. A cargo consisting of some two thousand boxes of oranges arrived from Mexico infested with a scale unknown in our State. These were condemned and destroyed. Besides these, numerous animals which have proved very destructive to fruit in Australia were found on board of vessels and killed. Among these was the flying-fox, a pest that has proved such a menace to fruit culture there that all sorts of means have been employed for its extermination, but as yet without avail.

After many years we have succeeded in having laws passed that have stood the tests of our courts. It would be impossible under our present strict quarantine system for injurious insect pests to obtain a foothold and commit the devastation that many such pests did before we had the quarantine system. There are yet pests and diseases as destructive as any known, which destroy crops and trees, and which eternal vigilance alone will keep out. What would our great prune crop be worth should the *plum curculio* obtain a footing, or our peach crop should the *peach yellows* get in? It is not alone to the keeping out of pests that our quarantine work is devoted, but to keeping down those already here. The work of the *Vedalia cardinalis* on the cottony cushion scale is known to you. Owing to the efforts of the State Board of Horticulture we have an equally efficient foe of the black scale, the *Rhizobius ventralis*, while parasites for the greater part of our pests have been discovered and propagated. Who can estimate the value of this work alone to the fruit growers of our State? We may claim that it is worth almost the annual return of the fruit crop, for had it not been for our quarantine measures I doubt whether the fruit output of California would have had any great value to-day.

The work of the *Rhizobius ventralis* is winning for itself and for this Board, to whose efforts its introduction is wholly due, golden opinions on all sides. Interested parties sought to decry it for some time and belittle the work of the Board, but even the worst of these has been compelled to acknowledge the wonderful work it is doing in freeing the orchards of black scale and all other scales of that species. During the past season numbers of colonies of this ladybird, numbering many million insects, have been distributed over the State, and it is safe to say that the black scale is doomed, and the *Rhizobius* and *Vedalia* will go on record as the greatest of boons to California orchardists. Besides these, numerous other parasites have been introduced and propagated, all of which are doing good work; but these two have done such phenomenal work and reflect so much credit upon our State Board of Horticulture, that I have been tempted to allude to them separately. It is impossible to estimate the great benefit these insects have proved to the State. Suffice it to say that it is incomputable. Every means should be put in our hands to pursue the investigation to its fullest extent. I refer you to the discussion on beneficial insects at the Los Angeles convention a year ago, and especially to the remarks of Major C. J. Berry and Judge Heath, and a resolution on pages 298 and 299, of the report for 1893–4. I also refer you to the report of two special committees, on pages 336 and 337 of the same report. Those reports, as adopted, provide for the establishment of a Bureau of Statistics, an appropriation for the importation of predaceous insects, and a Vagrant Law.

In recognition of our great industry and in honor of its followers, June 8th was set apart as Horticultural Day at the Midwinter Fair, and was celebrated under the auspices of the Board. A very large concourse was present, appropriate addresses were made, and an offshoot of the original olive tree—from which dates the horticultural period in California—was planted with due ceremonies. The day passed off admirably, and, like our annual conventions, it seemed to draw those who participated in it nearer together, and made all feel that among the orchardists of California, at least, there was no north, no south, but we were one and undivided—Californians first, last, and all the time. It was a day that will linger long in the memories of those who were fortunate enough to participate.

One of the most attractive features of the late Midwinter Fair was the display made by the State Board of Horticulture. Here were gathered together in one space all the varieties of fruits, nuts, and fruit products of the State, together with the finest entomological display, scientifically arranged, ever exhibited in the State. The exhibit was visited and admired by nearly every one in our own State, besides thousands from the East and foreign countries, and was universally commended for its thoroughness and arrangement. It was so arranged that after the fair it could be used as a permanent exhibit, and it is now at the rooms of the Board, 220 Sutter Street, San Francisco, for public inspection.

In glancing over our programme for the present convention, I am impressed with the fact that we are keeping pace with the times. Former conventions have devoted much time to the propagation and cultivation of fruit. These were then the important questions. We have learned how to grow fruit, and now have it in abundance. The great questions for consideration at present are how best to dispose of it, and our present convention will devote much of its time, not neglecting other matters, to this branch.

Very much of our prosperity and the rapid growth of this great industry, which has added millions to the wealth of our State, is due to the fostering care of past Legislatures, which have recognized the necessity for its protection, and have put the means in our hands for its advancement.

APPOINTMENT OF COMMITTEES.

President Buck announced the appointment of the following standing committees:

On Transportation.

H. Weinstock, of Sacramento.
H. P. Stabler, of Yuba City.
F. H. Buck, of Vacaville.
Geo. D. Kellogg, of Newcastle.
J. Z. Anderson, of San José.
N. W. Motheral, of Hanford.
D. T. Fowler, of Fresno.
Gen. N. P. Chipman, of Red Bluff.
F. A. Kimball, of National City.

On Legislation.

B. F. Walton, of Yuba City.
David Reese, of Florin.
A. T. Hatch, of Suisun.
Alfred Holman, of San Francisco.
Wm. B. Gester, of Newcastle.

On Resolutions.

R. C. Kells, of Yuba City.
H. P. Muscott, of San Bernardino.
R. D. Stephens, of Sacramento.
D. T. Fowler, of Fresno.
P. E. Platt, of Sacramento.

RECESS.

The Chair declared a recess till 1:30 o'clock, to enable the members of the convention to give personal greeting to the Governor.

AFTERNOON SESSION.

[Chairman BUCK in the chair.]

TRANSPORTATION AND FREIGHT RATES OF GREEN AND DRIED FRUITS.

By W. B. GESTER.

In order to open a discussion on this subject of Fruit Rates and Transportation, I will state that for the few minutes I occupy the floor, I shall represent the Placer County fruit district. As you all know, this is a district that lies between here and the summit of the Sierra—the principal fruit-growing district, extending from the town of Rocklin to the town of Colfax, and lying immediately adjoining on both sides of the track of the Central Pacific Railroad. The business of these last two years in the shipment of green fruits to the East has not been profitable, and therefore not satisfactory. All of this in spite of what we consider the very great natural advantages that the district has. About the first day of this month the growers of the district were called together at Newcastle. The meeting was a representative one in every respect, and it was there decided to begin the movement which should result, as far as possible, ultimately in securing a reduction of railroad rates on green fruits. In order to expedite matters as far as possible, I will read to the convention here, the set of resolutions passed by that meeting, which represented the district known as the Placer District. The meeting was held on the 1st of November. The growers assembled and presented their views individually, and a committee was appointed to draw up sets of resolutions, which were adopted. Some of the propositions were not acceded to unanimously, but at the same time it was so nearly unanimous that the whole set of resolutions may be said to have been adopted with unanimity. The resolutions are as follows:

WHEREAS, The fruit growers of Placer County find at the close of the fruit-shipping season of 1894 that the gross sale returns received from the fruit shipped by them to Eastern markets over the Southern Pacific System and its connections have not paid them any earnings on their capital invested in lands and trees, and more even than that, have not paid all the charges incident to the growing and shipping of the fruit; and whereas, it is clearly apparent from the decreasing sale price of fresh fruit during the several years last past as production has increased, that the growers cannot expect any higher prices for fruit than obtained this year, and possibly not as high, and therefore cannot expect a profitable fruit industry again from high sale prices; and whereas, it is also clearly evident that the only chance of again getting the fruit-growing industry of Placer County on a profit-earning basis lies in reducing the cost of growing and shipping the fruit paid by the grower; and whereas, of the several items which make up the total of this cost paid by the producer there are only two—the freight and refrigeration—which are large enough in amount, absolutely and relatively, in which a sufficient reduction is possible to again make a margin of profit possible to the grower;

Now, therefore, be it declared by the fruit growers of Placer County in meeting assembled, that the cost of fruit shipped paid by the grower is at its lowest possible figure in every separate and several item of that cost except the cost of freight and refrigeration fixed and charged by the Southern Pacific Railroad System and its connections;

And it is further declared that unless the rates of freight and refrigeration charged by the Southern Pacific Company and its connections be largely reduced, commencing with the season of 1895, it will not be profitable to ship Placer County fresh fruits to Eastern markets; now therefore, be it

Resolved, That it is the purpose of the fruit growers of Placer County to demand of the Southern Pacific Company and its connections to sufficiently lower freight and refrigeration charges to again make the growing of fruit profitable. Failing the obtaining of such freight and refrigeration charges, it will become necessary to cease shipping fresh fruits to Eastern markets, on the sole and sufficient cause that such shipments must inevitably result in loss to the grower. And for the further purpose of giving force and effect to such proposed demand, it is

Resolved, That the fruit growers of Placer County organize by mutual contract, agreeing each with the other to ship no more fruit unless such satisfactory rates are made; and

Resolved further, That this meeting form a committee of twelve, to be appointed by the Chairman thereof, which committee shall have all delegated power to do any and all things necessary to form such organization, to gather statistics necessary to demonstrate the reasonableness and necessity of the demand, to communicate with the fruit growers of other localities which have suffered equally and more by reason of the large freight and refrigeration charges, and to induce them to take similar action in organizing and in joining in making the proposed demand, and to do any and all other things required.

After the passage of these resolutions the committee, in carrying out these instructions, sent about the county to the different fruit-growing districts a circular letter, in which they made mention of this set of resolutions, inclosing a copy, and in which they promised—pledged—coöperation with any effort that might be made to secure this seemingly necessary reduction in railroad rates, and in which they begged the growers in every district to coöperate with them. They suggested that if organizations had not been made in the different districts which could coöperate with them, such associations be made, and wound up saying that they should give all the assistance that they could in this matter. Last night a number of gentlemen from the different counties met with the delegates from Placer County and an informal discussion resulted. There seemed to be unanimity of feeling in regard to this matter and the necessity of reduction in fruit rates, and it was decided—of course it was expected it would be—that matters would be left to the action of the convention which was to meet to-day. As far as the district which I represented is concerned, I beg most earnestly that the subject shall be treated fully and fairly and that everything shall be done to secure what we certainly do think is essential in this matter. The district which I represent shipped this last year something over 1,200 carloads of green fruit; this is 20 per cent of the total shipments of deciduous fruits made from this State. And if we find that we cannot ship our fruit in a fresh state at a profit we shall have to come to drying. That will bring us in competition with the dried fruit men in other districts, and they have enough to do now to find a market for the fruit already dried. We ask, therefore, that we have the help of the growers in different sections of this State who dry the most of their fruit, because we wish to keep out of competition with them, and it is for their interest we do so.

FRUIT MARKETING.

By H. Weinstock, of Sacramento.

In presenting my thoughts on the question of "Fruit Marketing," let me preface my remarks by quoting from an article on this subject recently published by the "Sacramento Bee," in which I took occasion to write as follows:

"We find ourselves in 1894 back again to similar conditions that existed in 1885 and 1886—with this difference: In those years about 1,000 carloads glutted the markets of the East; this year it takes nearly 7,000 carloads to do it. The difference between these two figures represents the growth in the volume of our shipments, which growth is largely the result of opening the Atlantic sea-board markets, and many interior markets, by the introduction of the auction plan of selling fruits, a system first introduced in connection with the sale of California fruits in 1887.

"In spite of the railway strike, the hard times, and the more or less unsatisfactory railway service, the year 1894 should have been a prosperous one for the California fruit grower, who, so to speak, had for the first time in the history of the fruit industry the great markets of the East largely to himself—an opportunity caused by the almost total failure of the Eastern crop, and such as may not again present itself in many years. This golden opportunity, however, was largely wasted through lack of proper and intelligent distribution of his products.

"As a rule, the markets of the East were kept glutted and the prices to the grower thereby made ruinously low. Such having been the case in 1894, with a probable shipment of about 7,000 cars, and with the Eastern crop almost a total failure, what is likely to be the result when the California fruit crop will aggregate many more than 7,000 carloads, as it surely will within the next few years, and when the Eastern crop shall be a normal one, or an unusually large one? The answer must be self-evident. There can be but one result, and that result one of disaster to the army of fruit growers in our State and a serious crippling of the green fruit industry of California.

"As far back as 1885, when our Eastern shipments did not exceed much over 1,000 carloads of green fruit a season, the cry was already raised that we were over-producing, and that the ruinously low prices received in those years in the East were caused by an over-supply. There were many, even among the oldest and most experienced California fruit men—dealers and growers—who at that time strongly advised that we should stop planting and tear up a portion of the trees and vines already planted. And yet, in spite of these opinions, as soon as the causes for the low prices were removed, and the system of handling our fruits in the East changed and new markets opened and developed, we have seen the shipments increased four- and five-fold at better prices than were obtained when 1,000 carloads and less were shipped in a season, showing plainly that the low prices realized in those earlier years were not caused by over-production, but by a lack of knowledge and proper facilities for the handling of the fruits.

"All this will, to my mind, apply to present conditions. I, for one, do not believe that in a year like this, with a fruit famine in the East, 7,000 carloads should glut all the great markets east of the Rocky Mountains, especially when it is known that the market of New York City alone has, in the past, with profit to the grower, consumed as many as 500 carloads of domestic peaches in one week. The fault is not with the markets but with our manner of distribution. Fortunately this is a matter that can be remedied, and every effort should be made to bring about this remedy as speedily as possible.

"During the earlier history of the auction-sale system it was comparatively easy to regulate the distribution of our fruits in the East, from the fact that over 90 per cent of the shipments were made through two mediums, the California Fruit Union and the Earl Fruit Company, which made it possible to more or less regulate its distribution. But within the past year or two new conditions have arisen. In place of the great bulk of the fruit passing chiefly through two hands, a large number of coöperative companies, Eastern brokers, fruit commission men, and others, have entered the field and have been making indiscriminate shipments to the various Eastern markets, resulting in disaster all around. Each shipper has, naturally, endeavored to hide his movements from all others, and the result has been that all have worked in the dark, and the directing to destination of the fruit has been almost entirely a matter of guesswork. The wonder is not that the loss has been so great to the grower, but that under the circumstances, the losses have not been still greater. So long as this unintelligent manner of distributing fruit shall continue, so long must disaster follow, with injury to all and benefit to none, excepting perhaps, to the Eastern consumer.

"Early this year I foresaw the present results and advocated the establishment of a Bureau of Information, to be supported by all engaged in shipping fruit, whether growers or shippers. The purpose of this Bureau of Information being to issue daily bulletins to all subscribers, showing the condition of each market, and the contents and destination of the cars of fruit eastward bound; so that all shippers might each morning have before them a photograph, so to speak, of the situation, and in that way be enabled to more intelligently determine where their fruit should be sent.

"Though advocating the plan, I had little hope of its adoption this past season, realizing, as I did, that many growers and shippers would be loath to reverse the old time policy of hiding all information concerning the movement of their shipments and follow a new policy of giving to this proposed Bureau the fullest information concerning the movements of their fruit. I realized that it would be a hard matter for them to see the necessity and the wisdom of such a step until serious loss and suffering alone would finally leave them no choice between this—to my mind—progressive step or ruin. The policy of wild-cat shipments, continued this present season, with its disastrous results, has, perhaps, done more to prepare the minds of the shippers and growers for the proposed plan than years of writing or speech-making, and I believe that the time is now ripe for the earnest agitation of such a step.

"The auction system, now so thoroughly and so successfully established throughout the East, has revolutionized former conditions. It is a system which insures the absolute sale of all fruit immediately on its arrival at the rate of five minutes to a carload; a system which brings to the grower the highest price his fruit is worth at the most favorable moment, which, of course, is immediately on its arrival; a system which gives the grower absolute protection, and insures his getting from the Eastern agent every penny his fruit is sold for; a system which practically means spot cash payment on the part of the Eastern buyers, since all responsible Eastern receivers are expected to remit within twenty-four hours after the sale; a system which makes it possible for the shipper at this end to know the result of the sale on his entire shipment within an hour of such sale taking place—which information formerly did not, as a rule, reach him for weeks; a system which has put all Eastern buyers on a level, and has thereby encouraged many hundreds of Eastern dealers, large and small, to deal in California fruits, who formerly either could not or would not handle our products, but who in recent years have worked out so many new channels of trade that our shipments, from 1,000 carloads or less in a season, have increased to nearly 7,000 carloads for 1894—yet, with all the advantages and benefits that have followed the introduction of sale by public auction, the auction system has not made it possible for a market that can use but five carloads a day to use ten carloads a day at an equally fair price. Nor is it possible for the human mind to devise a plan that will make a five-carload market handle at a satisfactory price a ten-carload shipment.

"The remedy must lie in the direction of sending to the one-carload market one carload of fruit only; to the five-carload market, five carloads of fruit only, and so on. The surplus, if there be any, must be kept at home, dried, sold to canneries, or if this cannot be done, then it is better that such surplus shall rot on tree or vine rather than go East and there demoralize the prices for the great bulk of shipments which otherwise would yield fair returns.

"With proper and intelligent distribution, however, there need, as a rule, be no surplus; at least not for years to come. It is to the end that the glutting of markets be hereafter avoided, and that our fruits be more intelligently distributed, that the proposed Bureau of Information is advocated."

But there are yet other evils that must be remedied.

The wonderful success attained by the auction plan during the earlier years of its trial in the selling of California fruits has of late been lessened by unexpected abuses that have been allowed to creep in. One of the great advantages claimed for the auction plan was the bringing together, under one roof and at one hour, all the buyers, great and small, from a radius of many miles, who were obliged to bid against each other to obtain a share of our products. This great gathering of bidders insured the growers getting the highest value for their fruits and diminished the possibility of combinations among dealers.

But soon jealousies and bitter differences arose among the California shippers and growers, who, to spite each other and regardless of their own best interests or the best interests of the fruit industry, encouraged the establishing in the leading Eastern cities of rival auction houses. So that to-day we find four auction houses in Chicago, two in New York, two in Boston, three in Philadelphia, two in Buffalo, and so on. All of which cannot but be most hurtful in its results to the interests of the grower.

Two or more auction houses in any one city cannot but mean the scattering of the buyers and the forcing of our fruit into competition with itself; thus defeating one of the chief benefits claimed for the auction plan, namely, that of bringing all buyers together at one time and under one roof, compelling them to compete with each other for the benefit of the grower, instead of forcing our fruit to compete against itself for the benefit of the buyers.

There can be absolutely no advantage in more than one auction-room in any one city; while the evils and the injury to the grower and shipper in supporting two or more auction houses in any one market must be self-evident.

Nor will the highest results to the grower be reached until this second evil in marketing our fruits be overcome, and one auction-room only is maintained in each city.

There remains yet a third evil that must be corrected.

It will be remembered that it was claimed for the auction plan that one of its great merits lay in the fact that *all* buyers, large and small, were, under that system, brought together and made to compete with each other; thus increasing the competition among buyers and lessening the chances of combinations among bidders. This end has of late years, in a measure, been defeated by certain auction houses accepting bids only from members of certain associations, thus barring out numerous buyers whose support and whose aid as competing bidders are of much importance to the interest of the grower. The grower's interest demands that every buyer, however humble, so long as he is prepared to buy in the reasonable quantities usually fixed by auction rules, and so long as he is prepared to pay cash for his purchases, shall not alone be invited to come, but shall be encouraged to regularly attend all sales and to bid as lively and as frequently as possible. This arrangement may not suit the interests of the Eastern fruit-jobber, but the question to be considered is not " What is in the interest of the Eastern jobber?" but rather, " What is in the interest of the California fruit grower ? "

We find then, that in order to remedy existing evils the three following conditions must be established:

First—A Bureau of Information to aid in regulating distribution.

Second—One auction-room only for each city.

Third—Auctions open and free to all.

"But how is all this to be brought about ?" I hear some ask. "How can we compel people to join in supporting a Bureau of Information, or how can we prevent two or more auction houses from operating in each city if they choose, or how can we control the action of such auction-houses, and dictate to them to whom they shall sell ?"

My answer to these probable questions is, that the fruit growers, if they but know it, are the masters of the situation, and the success of the whole matter rests entirely with them.

It is true that a thousand growers, each acting for himself, can accomplish nothing. Each acting alone will continue to find himself the helpless victim of conditions that must sooner or later drive the many to bankruptcy and to ruin. But the thousand acting as a unit become supreme and can establish conditions conducive to the best good of all, with injury to none. While a few large growers here and there may find it to their best interest to make their own arrangements with Eastern agents and to ship direct; yet the great majority of growers prefer to do their business through one of the numerous shipping houses, such as the Porter Bros. Company, the Earl Fruit Company, the National Fruit Company, and others. To all of which there can be no objection so long as such arrangements continue mutually satisfactory to shipper and grower. Nor is it necessary to disturb these relations in order to establish the three conditions outlined above, namely: (1) A Bureau of Information; (2) One auction-room only in each city; (3) Auctions open and free to all.

With the above three conditions established, growers who do their own shipping, as well as shipping houses, cannot alone retain their individuality, and cannot alone continue their present business relations with their numerous clients, but these business relations can be made mutually far more profitable than they have been in the recent past.

If the growers desire relief it is for them to organize and to act as a unit. It is for them to withhold their business from shipping houses who decline to unite in the support of a Bureau of Information. It is for the growers, acting as a unit, to instruct their shipping houses and their Eastern agents to sell their fruits in one auction-room only in each city, and to make these auction-rooms open and free to all. Let but the growers unite on these propositions and the thing is done.

During the past several weeks I have been in communication with nearly all the California shippers and the Eastern receivers of California fruits, and almost without exception the Eastern receivers are in favor of regulating distribution through the medium of a Bureau of Information, and such California shippers as I have been able to reach, realizing, as they do, the grave evils that threaten the future of the grower as well as their own prosperity, have signified their willingness to heartily enter into and support any plan that the growers may deem for the best good of all.

As an illustration, let me quote from a recent letter received from Thacker Bros., of Chicago, who write: "There should be established a Bureau of Information at Sacramento, corrected daily, showing to what point each car was shipped, with daily corrections showing diversions. This would prevent flooding the market whenever some one market showed better than some other. It has happened this season that forty or fifty cars have been diverted to the same market by different shippers in one day."

Hart & Tuckwell, of Montreal, write: "Some arrangement should be made at point of shipment whereby growers would regulate the shipments and see that no market would receive too much fruit at one time."

Seavey & Flarsheim, of Kansas City, write: "It is a feast or a famine all the time. Regular supplies and regular markets would be secured by intelligent coöperation through California distributing associations."

W. A. Banks Company, of Cleveland, write: "We think there should be one general headquarters, or Information Bureau, where all shippers were compelled to report their shipments, or their contemplated shipments, to different markets, so that each shipper would know just how many cars of fruit are being shipped to different points, and so that, by this information, the supplies to the different markets could be regulated and gluts obviated. The over-supplies at different times is the greatest enemy the shipper has, and there is bound to be a smash in prices from which it is hard to recover."

The Iron City Produce Company, of Pittsburg, write: "In our opinion all the fruit growers and shipping associations of California should be united as one, with one distributing head, which, we think, would prevent to some extent the glutting of any one market. This is the chief cause of low prices. There is not proper distribution; either a market is very high or ridicuously low."

H. Harris & Co., of Boston, write: "Some plan to regulate shipments to the different cities of the country should be adopted."

A. Grossenbach & Co., of Milwaukee, write: "During the early part of the season there was a constant over-supply of fruit in this market to at least double the market's capacity. This was occasioned because others were shipping here without proper judgment. The great error was the lack of proper distribution, crowding some of the larger markets and allowing many of the smaller markets to go without supplies. These larger markets, by forcing down low prices, were able to supply the smaller markets and to keep their markets ruling low correspondingly."

Though I strongly advocate one auction-room only in each city, this does not necessarily mean one auctioneer only in one city. With a Bureau of Information to regulate distribution and to prevent the glutting of markets, there need be no limit to the number of receivers or to the number of auctioneers in any one city. As a matter of convenience, it might be better if there was also but one auctioneer in each city; but this is not imperative.

Growers and shippers may consign their fruit to whomsoever they please and employ as auctioneers whomsoever they please, but it must be made *imperative* that all fruit and all buyers and all auctioneers in any one city shall be brought under the same roof and at the same hour, in order that the best results to the grower may be obtained.

If there are two or more auctioneers in any one city they must arrange for one auction-room to be used in common; and they must arrange among themselves, either by a drawing of lots or by a system of rotation, for the sale at the same hour of all fruits to be offered each day.

Believing, as I do, that as growers you keenly realize the fact that successful marketing is the all-important question that now stares the fruit industry in the face, and that unless you can bring about conditions that will insure a fair price for your products, all things else that may be discussed here for your welfare are of no avail. Believing this, I feel assured that the suggestions outlined above as to how to remedy certain existing evils may safely be submitted for discussion and for your serious consideration.

Marketing is the question of questions, and should therefore receive your best and most thoughtful attention. If, after the fullest discussion, the plan herein submitted should meet with your approval, I shall hold myself in readiness to present a set of resolutions, prepared with a view of putting the proposed plan into prompt action.

CO-OPERATION IN THE MARKETING OF FRUITS.

By Col. Philo Hersey, of Santa Clara County.

I. *How fruit reaches the consumer.*

The producer after maturing his fruit, has been accustomed to cure it, or sell to the purchasing drier. If he has cured his own product, in most instances it is offered for sale in ungraded lots, with but little knowledge of its value as compared with standards that are fixed by the jobbing trade. It may be above or below these standards. This is not his concern. His desire is to get as much and a little more than his neighbor. His expectation has been, and now is, that some one of necessity must come along and purchase his fruit, pay him cash, and what becomes of it afterward or through what changes to meet the demands of trade it may go he has little care. The commission house representative, the broker, the dried fruit packer, the Eastern representative, each follows the other in a tour of solicitation, instruction, importunity, and advice, as to what the market is, what is best to be done, what the market price is, how cheap fruit is in Vacaville, Winters, Red Bluff, Fresno, and Los Angeles, and in the course of time have established a market price, if the speculator in "shorts" has not previously attempted it, and then the producer begins to sell. The small producer depends upon the buyer and packer, the larger one upon the commission house, the "sharp one" upon the Eastern representative. In this manner and through these channels, the fruit is collected and packed, or shipped, finally passing through the jobbers and wholesalers to the retailers and then to the consumers. This process, with the cost of freight added, increases the cost to the consumer 133 per cent, on an average, over the price paid the producer.

Very often have I heard this season that prunes of medium or inferior grade and quality are retailing from 12½ to 18 cents, apricots from 15 to 26 cents, and other fruits in like way. There are places where our fruits are sold at legitimate profits, but I have never yet had the pleasure of hearing from a consumer that he knew of such place.

The producer, either individually or by combination, should fully prepare his product for distribution among the retail trade, and avoid as far as possible the speculative manipulation after it leaves his possession. In an unfinished state the product is the material of speculation, and has a price fixed by the conscience of the buyer and the ignorance of the seller. Combinations of producers for manipulating their own product is the best method, if our limited experience is sufficient for a criterion. Combinations, however, must be understood, to be governed by coöperative principles, in order that all share in the benefits in the ratio of their products. The individual with one ton or five tons of varied product is helpless. One hundred individuals with one thousand or two thousand tons are a force that can be utilized for their combined benefit and protection.

It is believed that the old system of disposing of our product must be materially changed; not entirely ignored or set aside, but shorn of its gambling or speculative features by those who claim to be in our service. Again, those who are paid by us for their service should serve us, and not use their best efforts upon us for the benefit of others. In order to bring about these changes we must place ourselves in a condition of self-defense at least, and if perchance offensive action became necessary we should be in part prepared for it. Unless this is done the fruit producer will soon become a plodding slave of a ruined industry, which will furnish luxury and wealth not to himself but those feeding upon the product of his unpaid energies. I am aware that coöperative work is said to be too closely conditioned to the affairs of Heaven to be successful on earth. Those who shout this loudest are the Harpies who swoop down upon us for profit, and are as likely to be our neighbor as the man of business. Personally, I see no better method than coöperative work in neighborhoods and communities. I do not believe there is any other method that will avail anything. I am positive that all persons dealing in our product in whatever way should be compelled to deal through our coöperative associations. Then by being sensible and reasonable ourselves we might impart some measure of these high qualities to others. Those who would be equally benefited with ourselves would be the purchasers of our concentrated product, whether wholesalers, jobbers, or retail dealers. There would be some assurance to them of a steady market, and sufficient time for legitimate sales with legitimate profits, and but little reason to fear speculative fluctuation.

II. *The forms of associations should be incorporated bodies*, for the following reasons:

First—That they may be a legal body with the least possible liability to the individual.

Second—For the purpose of owning the plant necessary for transacting the business, whether for drying and selling or concentrating and selling dried fruit, by paid-up stock subscriptions.

Third—For establishing a credit to obtain working capital for each season's business.

Fourth—Beyond this the whole method should be coöperative and equitable.

Cost of plant for drying and storing for marketing will vary from $18 to $30 per acre. The difference is occasioned by difference in cost of drying-ground, by difference in cost of warehouse facilities, and by the varied division of the fruits upon the acreage represented, as all one kind of fruit requires more trays and more land than a variety of fruits maturing at different times, as apricots, peaches, and prunes. It is generally necessary to prepare for that kind of fruit of which there is most, furnishing 1,000 trays 3 by 8 feet for each 75 tons and an acre of land for each 1,200 trays. Warehouses or storehouses are best of brick and are equally economical, when difference of insurance and the difference of shrinkage as compared with wood or iron are considered. The cost of a brick warehouse, iron-roofed, 60 by 150 feet, two stories, is $7,000, varying in locations, as material and labor varies. A wise policy in building a plant is to start each department so that it can be indefinitely enlarged without rendering useless what has been already done.

An Exchange plant for concentrating dried fruit should be what conditions demand. The Santa Clara County Exchange began with five acres of land, 338 by 569 feet. It built a warehouse 156 by 60 feet (two stories), with an annex 30 by 40 feet (two stories), and a boiler-room. There passed through this building in the season of 1893, 6,200,000 pounds of fruit. This amount could not have been cared for had it not been that sales were made so that shipments followed receipts in rapid succession during the first two and one half months. In the season of 1894 fruit has been held, and 3,000,000 pounds have been about the capacity of the warehouse. The cost of this plant is $18,000. The land cost $5,775. The land is double the amount required, and if one half the amount had been purchased as favorably located, $15,000 would have been expended. It, however, needs 250 feet added to the length of the building, and an additional processing and packing-room 120 by 80 feet, one story. These additions would cost $13,000. Such a plant would answer the demands for handling 800 cars of dried fruit, and also provide facilities for shipping green fruit. The warehouse is on the line of railroad, as should be the case with an Exchange for dried fruit, and also a drying association, where it will at the same time serve equally well the growers who deliver their product for drying. However, green fruit should always be delivered at a point where the average distance will be least for the benefit of the fruit itself.

III. *In all coöperative associations, every person who is to deliver his fruit, whether dried or green, should make it known, with the amount and kind estimated, at the earliest possible period.* The necessity for this is that the market is very variable, sometimes coming early and sometimes late, and for either condition the management should be prepared with full information, or often the best opportunities will be lost. The same policy is necessary in drying associations, in order that the management may be fully prepared with plant for handling the deliveries without loss. This action is a source of encouragement to the officers of the associations, through the confidence thus manifested.

STATE FRUIT EXCHANGE.

By B. F. Walton, of Yuba City.

One year ago the State Horticultural Convention at Los Angeles adopted the following resolution:

Resolved, That a committee of seven (7) be appointed to consider the matter of coöperation in fruit marketing, with instructions to report to this convention on Thursday, for its consideration.

On Thursday the following report was read and, on motion, adopted:

To the Fruit Growers' Convention:

Your committee appointed to consider the question of coöperative fruit marketing have had the subject under consideration, and respectfully report as follows:

We are satisfied that the conditions which have already brought disaster upon some branches of the fruit industry of California will, if unchecked, speedily bring similar disaster upon all other branches.

We believe that the only remedy is that the growers shall themselves assume the marketing of their own product, and that the time has now come to apply that remedy.

We heartily approve and indorse the methods of coöperation already adopted by the citrus growers of Southern California, and the dried fruit producers of Santa Clara County, which we find substantially alike in principle, differing only in detail to meet the different requirements of the dried and fresh fruit trades. We regard it of the utmost importance that the great coöperative movement now in progress should be so directed that all interests involved should work together, not only in harmony, but in actual consultation with each other.

To this end we strongly approve the movement originated by the State Horticultural Society for the organization of a State Fruit Exchange, and urge all individual growers and all coöperative societies to unite in its support, trusting to the combined judgment of all interests to direct its movements to the general good. We especially urge the importance of a large attendance from all parts of the State at the meeting called by the State Horticultural Society for the 29th of December next for the purpose of settling and indorsing the plans for the Exchange, awakening enthusiasm in its support, and selecting the men to carry it on for the first year.

I. H. Thomas, Tulare County,
Chairman.
T. H. B. Chamblin, Riverside County,
D. T. Fowler, Fresno County,
Edward Berwick, Monterey County,
N. W. Blanchard, Ventura County,
R. C. Kells, Sutter County,
H. A. Brainard, Santa Clara County,
Edward F. Adams, Santa Cruz County,
Committee.

Los Angeles, November 22, 1893

A temporary organization of the California Fruit Exchange had just been effected, and the first State convention of fruit growers to which the subject could be referred expressed its opinion thereon in the above positive language, thus practically indorsing the plans as then outlined, and giving to the enterprise the formal indorsement of this body.

It is proper to present to this convention a brief outline of what has been accomplished by the organization thus created and indorsed.

Up to the State convention of December 28th last, which had been called by the State Horticultural Society to consider the subject, the organization was temporary and experimental. The plans proposed were widely advertised, and it was understood among its temporary Directors that if the fruit growers, when asked their opinion, should fail to give the enterprise emphatic approval, it would be abandoned; if approved, it would go on under the direction of such persons as the convention, so called, might determine.

This convention, after careful consideration, clause by clause, of the plans outlined by the preliminary organization, unanimously adopted them without change, and formally recognized the California Fruit Exchange as the authorized representative of the Fruit Growers of California.

My connection with the movement began with the convention of December 29th, where, with ten other gentlemen, but two of whom had been connected with the temporary organization, we took charge of the Exchange as Directors, and proceeded to incorporate under the laws of the State, each chosen Director qualifying by a subscription to a reasonable amount of stock.

At the first meeting of the Directors, the manager, Mr. Adams, who had undertaken that duty with the understanding that his service was to be only temporary, presented his resignation, which, however, has never been accepted, and having become so familiar with details that he could hardly be spared from the work of organization until some other one as competent had developed, he has continued to act to the present time as the executive and only salaried officer of the Exchange.

Upon taking office as Directors we found our total resources to be a stock subscription of about $1,600, upon which 25 per cent was expected to be paid, and of which a trifling sum had been paid, and the proceeds of a collection for expenses taken at the convention, to offset which were the preliminary expenses of organization, amounting to rather more than the 25 per cent installment due upon stock subscribed. This has been increased to $5,000. It was our duty, under our instructions from the convention, to immediately proceed to promote local organizations in all parts of the State, covering all branches of the fruit industry, together with many other duties, all involving considerable expense.

None of the Directors were willing to conduct an Exchange except on a sound financial basis, and hence, instead of employing assistance to push organization in all branches of the industry, we have been compelled to confine our efforts to what could be accomplished by the manager, with such occasional assistance as individual Directors could give without abandoning their own business.

In spite of these difficulties, we are proud of what we have accomplished in organizing the dried fruit and raisin industry, collecting and distributing information, compiling statistics for future use, promoting f. o. b. sales, and adopting a uniform system of grading, and in the general preliminary business education of growers which must precede any effective organization. Local associations have been formed in all parts of the State, and we have already many calls for assistance in forming new local societies for next year.

The only possible way in which a State Exchange can be established and supported—unless by donations—is by the sale of stock and using its proceeds for expenses during the period of organization; after organization, the support to come by a uniform charge on the fruit benefited.

This was the manner in which the California Fruit Union was started. The individuals who subscribed for the stock do not give the money; they lend it by investing it in the stock of the corporation. The income of the Exchange must therefore be made large enough to allow a sum to be annually set aside to pay back into capital stock whatever sums are used in organization.

The theory of the State Exchange has always been that during the period of active organization it would be the leader, and thereafter the servant of the local Exchanges. The result of the first year's work has been the organization of Exchanges which will next year handle an amount of fruit large enough, when joined to the output of those older than the State Exchange, to support the State Exchange by a uniform charge and not feel it. We have called a convention of authorized delegates of the local Exchanges, to meet at the time of our annual stockholders' meeting, and that body, when convened, will practically determine the immediate future of coöperation of this State.

This statement contains in outline the history of our operations to this date. The details will, of course, appear in our annual reports to our stockholders' meeting in January. Something of our views as to future action will appear from other papers to be read later.

Having made this statement to one of the bodies responsible for our existence, and the present representative of the interest of which we are servants, we ask this convention, if upon consideration it finds that we have done our duty by the interests we have tried to serve, to strengthen our hands by such proper resolutions of approval as may be expected to have weight with the public. If, unfortunately, you shall deem otherwise, it must never be forgotten that the important question is not whether a fortunate selection of instruments was made where withal to begin this work, but in what other ways, and by what better hands, shall this great work be carried to completion; the present Directors of the Exchange can direct the way but a few weeks longer; the fruit growers who selected them have to the end of time thereafter to perfect their work. It is neither strange nor serious that the first Board of Directors selected to carry on a new work should fail to bring all things right in one year, but it will be very strange and serious indeed if the great body of fruit growers in State convention assembled should be swerved from its course, after due deliberation adopted, or fail to persist in compelling its will to be executed by one agency, if not by another. None of those connected with the State Exchange desire, and some will be unable, to be as active as they have hitherto been in this cause, but every one of them will be found firmly supporting and assisting. The lines of our advance have been carefully laid down; upon the more important questions of detail, even, there is no difference of opinion among those whose means of observation qualifies them to judge what is possible. The one thing which we must never forget, and without which no success on any line will be possible, is that we must first perfect and solidify our organization, and then, with our organization, we can do what we please.

ADVANTAGES OF AN EXCHANGE.

By E. F. Adams, of Wrights.

It is suggested that I discuss several topics connected with State coöperation in fruit marketing.

I. *The work of a State Exchange and the cost of maintaining it.* Whatever we plan, business is certain to flow in the easiest channels. In transacting business, no one will continue to pay for unnecessary service. The problem to be solved, therefore, is to determine what necessary services, if any, a State Exchange can perform more cheaply and conveniently than can be performed by other agencies. If there are no such services, we need no State Exchange. One popular notion of a State Exchange is that of a prodigious commission house selling all the fruit of the State. I am now speaking in relation to the dried fruit trade, not fresh fruit, as to which I will speak later. Dried fruit is sold through different channels and with more deliberation than fresh fruit, but no State Exchange could ever possibly concentrate for sale any large portion of it, nor, in my judgment, would it be desirable. If the demand were greater than the supply I think it would be wise to concentrate the stock under one management. Considering all present circumstances, which might be set forth at greater length than the entire permissible limit of this paper, but having specially in mind the one fact that for some years to come we shall have evidently to rustle for customers, I think the more bright men we have rustling the better. I can conceive of an Exchange which, even under present circumstances, could sell the entire fruit product of the State to better advantage than it could be otherwise sold, but the forces to create such an institution do not exist. If a State Exchange sells any fruit it should be only an occasional incident. We can create no State Exchange at present through which all can sell their product more easily and to better advantage than they can sell elsewhere. That being the case, it would have no business that it did not struggle for, and a business enterprise which can exist only by fighting for the business of its owners had better not be started. A State Exchange can never become successful as a competitor for business, but only by a general wish to intrust business to it; all business competitors abuse and lie about each other, and all interests opposed to coöperation are as certain to drop their own quarrels and unitedly attack any coöperative concern, as a band of town dogs is to pitch on a country intruder. Under such circumstances a soliciting Exchange is certain to lose influence, the management become discontented, and all things go wrong. If ever a State Exchange exists to sell the fruit of California, it will grow; it will not be made. I favor local coöperative marketing, and I practice it because I find it more satisfactory and convenient than any other form; so, in the long run, will everybody, because it *is* so, and it will succeed.

Assuming then the success of local coöperative marketing, let us see what a State Exchange can do for the local association on better terms than they can do themselves.

In the first place, each local Exchange needs from one hundred and fifty to two hundred brokers in order to reach all markets; these brokers should be appointed after personal visits; very few local bodies think they can afford the expense of this, and not one has ever done it. It is, in fact, absurd for a small or moderate-sized Exchange to appoint so many brokers, when it could only expect to give business to a very few, and yet it is desirable for every Exchange to have direct access to every market. I think a State Exchange should appoint brokers for the benefit of all at the common expense, and then let each local concern push its own sales through those brokers, selling for cash at home if any speculative buyer is found to do better than the market.

All recognize the importance of "information," but comparatively few understand the exact items of information necessary, or how to get them with accuracy—accuracy, I need not say, being the essential element—or the necessary cost of so getting them. This information has never yet been got for the growers, who in spite of their Exchanges have thus far been way behind the trade in this matter. The gathering of information was one of the prime objects of forming the State Exchange. It has never gathered it to any extent worth mentioning; not because the management did not know what was wanted, and how to get it, but because they did not have the money to pay for getting it. The trade has spent its money and got it; the growers have refused to spend the money and have gone without it. The State Exchange is unquestionably the most effective and economical means that can be employed by growers for this purpose, but it must have the means to work with.

Opening and extending markets by advertising, by expositions, by ascertaining the special demands of different markets, and by all other means is preëminently the work of a State Exchange.

The matter of grading dried fruits is an essential element in any effective movement for extending our trade. It can only be settled by agreement among the owners of the fruit to pack in a certain way, and under certain definite terms. The Exchanges now organized control fruit enough to practically control the situation; whatever they agree upon and excute, the rest will come into. They need a central agency through which to keep in communication with each other during the first years of putting the system in operation, and, perhaps, to oversee an inspection. The State Exchange is an available agency for that purpose.

The cost of maintaining a State Exchange will be the salaries of two or three capable men, one at the East and two here, with the necessary clerical assistance, which will not be large, rent, printing, telegrams, postage, and stationery. It is absolutely necessary that there should be one good man constantly in the office, and one at liberty to go and come. This must be met by an adequate and annual income from some source. Any such income should be available from and after the first of July next. From the beginning of its organization until that time it must use its capital stock for support. This capital stock is being contributed by individuals who are entitled to receive interest thereon, which is an additional item of current expense. From the income there must also be annually set aside a sum to be paid back into capital stock the sum used in organizing, so that should the corporation ever wish to dissolve, the sum paid in by each individual could be returned to him intact. I estimate that for the first year or two a charge of 1 per cent on the output of the local organizations now existing would be ample for these purposes, and that thereafter the percentage would rapidly grow less. There are some legitimate ways whereby a State

Exchange can itself earn money, and thereby reduce the charge upon the local associations.

I think I should add that I have intentionally omitted stating one or two important uses for a State Exchange, for the reason that I think it full time that we stop stating in advance all that we propose. The best time for business men to state their plans is after they have executed them. It is necessary in such a case as this to indicate certain lines of operation, but I prefer to rest the case by saying that the need of a central agency is plain, and that when we have once created a powerful central agency we can do what we please with it.

II. *The proper work of the State Exchange in reforming the fresh fruit trade.*

I wish all our fresh fruit shipments could be made through one agency. At present they cannot, and that is the end of it with those who understand the situation. To accomplish this there must first be a general agreement, and next the power to carry out such an agreement. Neither the agreement nor the power to carry it out is now possible. There are now many firms engaged in the business who are here to stay for the present, and perhaps always. Before the next shipping season begins advances on crops will have been made by those who will by means of those advances control those crops in sufficient amount to render any reform whatever impossible unless that fact be taken into account. If to the amount secured by advances we add the amounts which these firms will secure through friendship, trade relations, and active canvassing and purchase we may understand something of the element not coöperative, with which we have to deal.

The successful concentration of the orange interest will be cited in opposition to this. The orange interest, however, is compact, being arranged along irrigation systems, within a comparatively limited area; the deciduous fresh fruit interests are scattered over the entire State. In my opinion—and I believe my opportunities for judging are as good as those of any other grower—no such organization of deciduous fruit growers as exists among the orange men is possible for 1895, nor any effective organization which does not recognize a member of the large shipping houses as the largest fruit owners of the State, and deal with them on that basis. The proper function of a commission house is that of agent for the owner, bound to do his bidding so far as he may choose to direct; but when a commission house has made advances the house becomes the owner, and will handle the goods as it deems best; it will doubtless get what it can for the grower, but will take, in so doing, no risks that can be avoided of failure to recover the advance. That is the way I would do business, and I am very sure that is the way they do business. All our large shipping houses have Eastern connections to whom it is an object to them to consign business; I suppose them to be the principal owners of the larger auction houses, and to have large interests in existing refrigerator lines. It has been generally believed that in former years goods have been routed very largely with reference to supplying business to those connections. I once suggested to the manager of one of the largest shipping houses that growers wished their fruit shipments consigned with reference to a fair division according to the known capacity of the several markets, rather than with reference to placing business in particular hands; and the reply was exceedingly prompt, that if the growers would supply their own money to do the business they could have it done exactly as they pleased, and I had nothing further to say; for he was right; and we cannot have it done as we please in any other way. Fresh fruit is perishable, and the trade in it risky, and so long as commission houses are expected to advance freight on all fruit, and make additional advances on a large part of it, they will conduct the business with reference to their own interests first; they will not involve their capital on any other terms; and neither would any one else here present.

The California Fruit Union was an earnest attempt to concentrate the fresh fruit shipments under one management. It did not do it and could not do it simply because the great mass of growers were fools enough to permit sharp opposition agents to work upon their prejudices; and they are just the same now. Any plan of coöperation which presupposes man to be an animal governed by the reason with which he is endowed is foredoomed to disaster; the Lord did not create us that way, and we must not count on it. Successful coöperation must be based on a knowledge of our own nature as it is, and not as it might be. In the case of the Fruit Union, during its later years the cry became almost universal throughout the State among its members, that the Union was a fraud and a humbug because it made use of an established firm as Eastern agents. "Great heavens," they said, "the Fruit Union was the same as Porter Bros.!" Well, what if it was! The important point for us was to get all our fruit shipments under one management; who constituted the management made no difference to us, so long as it was competent—and I never heard incompetence charged in this case—and yet we permitted sharp men to so work upon our prejudice as to defeat our own interest; and at the same time we showed our imbecility by regularly sending our annual proxies to those whom we knew would continue the agency. In the name of common sense if we wished a change in the management, why did we not send proxies to those who would elect Directors to make a change? It is simply because we are not built that way. If we revived that plan we should do the same thing right over. When the Fruit Union was started, the business was what we should now call very small; the times were prosperous, and growers not seriously involved by advances; there was but one vigorous private firm in the business, and the competition of that was wisely removed by making it the Eastern agency. Now there are I know not how many, all struggling for business, all fortified with fruit tied up with advances, and by acquaintance and trade relations; by our own folly we have lost the opportunity that we had, and it will not return.

In speaking of our folly in business affairs, I am not speaking of fruit growers, but of mankind. The trade of organization is no new one to me; all my business life I have been engaged in it, formerly in seeking to unite merchants and manufacturers for common objects, and speaking not as a theorist but as an expert, I declare unhesitatingly that there is no class of men on the earth so easy to organize and keep organized as farmers, and no other class of the same numbers engaged in independent business that it would be possible to organize at all. I suppose there are a dozen commission houses in the California fresh fruit trade; I would far rather attempt the organization of all the farmers in the State than the organization of that dozen commission men. Money enough would do either.

I have said so much to show that we need not expect to reform the fresh fruit trade by means of a single shipping organization controlled by growers, because no such organization can get the fruit. We simply increase the confusion by one more shipping house. We must attack the problem on another line, recognizing conditions as they actually exist.

I have, however, one more preliminary matter to deal with, and that is the inability of local organizations to realize their own powerlessness when acting alone. Local organization is absolutely essential to State coöperation, but in all local organizations I note in the beginning a feeling of decided independence of the rest of the world. Realizing how much stronger they are than as individuals they were, they have a feeling that they can lick anything. Nothing whatever can be done with them until they get over that. We have a great many local fresh fruit organizations who have each tried the strength of their heads against the stone wall. I don't know whether they have all had enough yet or not. The editor of our county Populist paper, after perusing the returns of the late election, remarked that it was very evident that the American people had not yet had enough hard times. Possibly our local fresh-fruit shipping associations are in the same fix, but in what I am about to say, I shall assume that they are satisfied and are now ready to get down to real business.

The object to be aimed at is to restrict the shipments of fresh fruit to the amount that can be sold before shipment—the seller guaranteeing the arrival in sound condition—rejected cars to be sent to the nearest auction city, for sale for what they will bring.

This involves such a revolution in the trade as it will be impossible to effect in one year. Keeping the ultimate object therefore continually in view, we must confine our efforts this year to perfecting our organization and securing such amelioration of present conditions as we find possible.

The keynote of all our operations must be that until we are organized we can do nothing; when we are organized we can do anything business-like which we then find desirable.

The first work of the State Exchange, therefore, in reforming the fresh-fruit trade, is to organize the fresh-fruit trade. Hitherto it has confined its efforts mainly to organizing the dried-fruit interest. The reason of this was that as the California Fruit Union was doing business when the State Exchange was organized, it was obviously absurd for a new concern owned by the same people to enter into any competition with it.

There are a few who suppose that there should be separate State organizations for the two interests. I think, however, that this feeling is confined to the few who have interests only in the one line or other. The great mass of fruit growers, however, are interested in both branches, and I for one do not wish the trouble and expense of supporting two organizations, either State or local, to do the work that one can do better. I don't think it is business. That the two lines must be under different salaried management is evident, but the same directory, the same capital, the same Eastern agency, the same general office, the same information, the same organizers, and the same many things will do for both, and it is folly to proceed otherwise.

The first step must be the formation of local organizations everywhere. There are minor economies connected with these local associations which justify their formation, even if no further result is reached.

These associations must be brought into constant communication with each other regularly, through the State Exchange, which must be supported by a regular uniform fixed charge upon the annual sales of each association.

The existing commercial firms now engaged in the fresh-fruit trade must be recognized and dealt with as practically the largest owners of fruit in the State, although also engaged in such business as to render it undesirable that they be actual members of our association. Our associations, State and local, will need to deal with them, and in making bargains there are always adverse interests to be reconciled, but the seeds of sure destruction are sowed and certain to grow in any organization which contains adverse interests within its own bowels.

There need be no fear that any concern engaged in handling our fruits will be unwilling to deal with us, whenever we have shown any power of cohesion; or that they will be unwilling to enter into any practicable methods of regulating the fresh-fruit trade; or that they will not do what they contract to do in that regard. The one thing essential is that a reasonable number of growers be so united among themselves that they who are authorized to speak for them represent actual business, and not mere wind; nor need there be any fear that if there be any reasonable number of growers whose representatives are authorized to say that they will not under any circumstance give business to any concern refusing to unite in making and enforcing reasonable rules for the general good, that any concern seeking our business will refuse to so unite.

In my judgment, the first step will be to prevent the shipment of fruit whose condition is such that it will obviously not arrive in good order, and that this can be accomplished in the easiest manner, by simply refusing to guarantee freights on such fruit. When we have accomplished that, other steps will readily follow. To gain the confidence of the trade, we must first show power, and this we can best do by confining our efforts to what we can accomplish, and not by attempting what we are very sure to fail in.

III. *Methods of securing coöperation of Local Exchanges through the State Exchange.*

The theory of the organizers of the State Exchange has always been that at the beginning it would be the leader in organizing the State; that when a proper number of local organizations had been created, it would cease to be the leader and become the servant and general agent. If not desired for that purpose, it should be abolished, after paying all bills and returning to its stockholders the sums they have advanced for the general good. We cannot honestly accept its work without repaying its cost.

The methods are simple. Money controls. The State Exchange cannot live without the support of the local Exchanges, and if they supply the money they are certain to control it. The method adopted by the Directors of the State Exchange has been to call a convention of authorized delegates from all local Exchanges to meet at the time of the annual stockholders' meeting of the State Exchange. These delegates will have power either to pledge or withhold the funds for the support of the State Exchange. If they withhold the funds it will die; if they pledge them they can attach such conditions as they choose and so control it.

The practical working method, as we understand it, would be this: The State Exchange, as the agent of the local Exchanges, would appoint all the brokers necessary in all markets, and supply their names to all contributing Exchanges, who would push the sales of their own goods through these brokers, missing no chance of a better sale at home. Each broker will contract to supply the State Exchange with information asked for, the State Exchange to repeat the same by daily private bulletins to the local Exchanges. Whatever further concert of action was thought desirable would be arranged through the State Exchange, and no one but those interested know anything about it. There would be a regular annual convention of delegates of local Exchanges, like the one now proposed to be held with the annual stockholders' meeting of the State Exchange. That is about all there is of it. The State Exchange would be the agent of the local Exchanges, and do what they wished and keep their business to themselves like other business people. The humbug of running a business for the benefit of all, at the expense of a few, would be abolished. That is about the way I look at it, and I think there is a general agreement sentiment among us.

In conclusion, I have simply to say to the fruit growers that it is either something of this kind, or the survival of the fittest. Take your choice. There is no trouble whatever in accomplishing what we seek, except the self-denial of stopping the everlasting talk which has nothing in it except wind, and considering the subject coolly, as we would any other business matter. If those who do not intend to coöperate in deed, will simply stop talking as if they intended to, and let the discussion be confined to those who mean business either one way or the other, we could tell better how we stand. The main trouble so far has arisen from the deceptive talk at conventions on the part of those in whom there is nothing but talk. This has lead to a belief in the existence of a sentiment which in great part had no existence, but largely had to be created to the great annoyance and disgust of those who supposed they had accepted the duty of carrying out the will of the fruit growers, and not that of educating them to adopt a policy. The sentiment that has had to be created was *not* that in the circumstances in which California is now placed there must be either effective coöperation or serious disaster to the fruit industry; that sentiment did, and does exist; what had to be created was the sentiment that it is as dishonorable in any grower who believes in coöperation and accepts its benefits, to neglect paying his part of the bill for it, as to evade paying the men who pick his fruit; it is not true that any man who can afford to own a farm cannot pay his coöperation bills as well as he can pay his other help bills; but there are hundreds of growers in the State who say they believe their receipts are largely increased by coöperative movements now in progress, and yet refuse to devote any part of those increased receipts to pay the bills for securing them; they say they are too poor, and it is doubtless true that this year there are many of us who find ourselves unable to pay all our bills, in which cases all we can ask is that the coöperative bills shall have a fair chance with the other bills, and be registered as a claim to be paid when possible. Those who can pay their other bills can pay their coöperative bills. I can easily respect men who do not believe in coöperation, and do not care whether it goes on or not, but those who desire it, but depend on getting its benefits while their neighbors pay the bills, I do not respect; nobody does. I respectfully commend this aspect of coöperation to the serious consideration of this convention; I can declare as an expert, that it is the one feature which now most needs attention; at the same time I must not omit to add that there is also a great number—quite sufficient to carry on the work, if they are got together—of as straight-out, square-dealing, pay-as-you-go coöperators as one could wish to see. It is they who have carried coöperation in California to its present state. I am satisfied that they will continue and will succeed.

Mr. Berwick: May I ask Mr. Adams a question? Do you propose to do anything at all with the green fruits coming here?

Mr. Adams: Why, the Directors of the Exchange started out with the idea that they represented the fruit growers of the State of California in all departments of the fruit business. It has been stated over and over and over again in all parts of the State, and an address and an official record will be made upon that now. Yes, sir; we expect to do everything—or the Directors will. I have no idea that I shall be called upon again to act with the Exchange. The Directors will be changed, but the present policy of management is this: That we propose to thoroughly organize the green fruit business, and the raisin business, and the nut business, and the dried fruit business just as rapidly as the fruit growers of the State will give us the money to do it with. I don't suppose they propose to go on and pay the expenses out of their own pockets.

Mr. Berwick: May I ask another question? As I understand the discussion of this convention, the great thing required by us in shipping green fruits is some functionary who shall undertake the duty of what I may call a train dispatcher; that is, one to prevent the different markets from being over-stocked; one to designate where it is best to send carloads of certain fruits to. Does the State Exchange propose to undertake that duty?

Mr. Adams: Certainly, certainly. I have not occupied the attention of the convention with the details of operation of this Exchange. But there is no doubt whatever that if Mr. Buck was manager, or if Mr. Weinstock was manager, or if any one was manager who was familiar with the needs of the situation, he would look on it in that way. There is no other way by which the growers could be protected. There is no question as to what they would do in that line, and no doubt that they would do precisely as Mr. Berwick has indicated. Whoever was manager would get there just the same. There should be a man in Sacramento doing the work that Mr. Buck has to do, and doing whatever other work is necessary. But in my judgment it is not wise to take up the time of the convention in discussing details of this character. I take it to be the part of wisdom to organize ourselves, to supply that organization with proper working machinery, to select the men in whom we have to trust to manage the organization, and to rely upon them for the handling of all these details. They will attend to them.

Mr. Berwick: Was that function attempted this year at all?

Mr. Adams: When we started, the California Fruit Union was in operation. It was believed by us that in a short time the two institutions would be brought under the same management—the Fruit Union would absorb us or we would absorb it, or there would be an amalgamation, or something. After the Fruit Union decided to go out of business, the Directors of the Fruit Exchange did all they could with the means at their command. And I did all I could as manager. I could not have worked any harder if I had killed myself. I never did any harder work in my life than I have done during the past year. But I am not big enough to spread over the whole State, nor any considerable part of it. The reason we didn't do more was because we didn't have more help to do it with. Now, my experience in organizing is this: that no individual will take anything on trust. Not one will say, "Here, I think those people are helping us and working right. I will go in with them." No one will send in his money or send in his name. Each man has to be visited on his farm. Each man has to be talked to an average of an hour or an hour and a half. The time ranges from half an hour to three hours. I don't think any one has ever been got into such an organization in any other way, and I don't think any one ever will be. If you will figure it up you will see that an organizer can visit but about ten men a day. And he has got to devote his entire time to it, and it will pretty near take his entire time to convince different people that he is not a thief, or at least, if he is one, that he has not been found out, and that everybody connected with him is not a rascal. [Laughter.] And it takes money to do these things. A small organization may be built up by voluntary effort. Such an organization as the West Side institution, perhaps; one that can be organized at a very small cost. But when you begin to spread out so that, in order to have effective work, some one person has got to devote his entire time to it, dropping all his own business, that person must be paid. No one can be found who will do it voluntarily, and without pay.

Mr. Weinstock: Under the head of coöperation, and for the purpose of bringing the matter to an intelligent head, so that our time may not be frittered away, I desire to present some resolutions in connection, purely and simply, with the green fruit branch of the industry. These resolutions that I now intend to submit, you will please remember, will not in anyway affect the question of the dried fruit industry—will not in anyway affect the raisin industry. They apply to the green fruit industry, pure and simple, and with your permission I will read them:

Whereas, Owing to certain causes, the shipping of fresh fruits to the markets of the East has more recently proven highly unprofitable; and whereas, a continuance of these causes must mean ruin to untold numbers of growers, and must seriously threaten the future of the fresh fruit industry of our State; and whereas, we have reason to believe that by united action on the part of commercial shippers, local associations, and individual growers shipping in carload lots and routing their own fruit, many of these causes may be promptly removed, and certain existing evils overcome; therefore, be it

Resolved, That without reference to any great popular movement to unite the fruit growers of the State in one organization for general purposes, but in addition and auxiliary to that movement, this convention recommends and earnestly requests the classes of growers and shippers above mentioned to proceed forthwith to organize themselves into a union to be known as the Fruit Growers and Shippers' Association of California; and be it further

Resolved, That the purposes of the proposed association shall be: (1) the establishment of a Bureau of Information to regulate distribution; (2) to establish one auction-room in each city; (3) to make such auction-rooms open and free to all buyers; (4) to do all such other things as may be conducive to the best interests of the fresh fruit industry of California; and be it further

Resolved, That the President of this convention be requested to appoint a committee of five, which shall represent all the above classes of shippers, for the purpose of taking steps to carry the above resolution into effect; and be it further

Resolved, That the California Fruit Exchange, as it proceeds in its work of organization, be requested to make the importance of maintaining such association very prominent, and to impress upon all growers the necessity of strongly supporting it in all ways; and be it further

Resolved, That the members of this convention hereby pledge themselves to give such association, when formed, our continuous and hearty support.

On motion of Mr. Righter, the resolutions were referred to a special committee of five, with instructions to report at the evening session.

The Chair appointed Messrs. Righter, Geister, E. F. Adams, D. T. Fowler, and H. Weinstock.

Recess until 7:30 o'clock P. M.

EVENING SESSION.

The Chairman announced that the topic for discussion would be a continuation of the subject which was under consideration during the afternoon session.

COL. HERSEY read a dispatch which he had just received, containing an offer of 2½ cents a pound for seven cars of prunes, averaging 110 to 112, and 1¾ cents for seven cars running from 120 upwards. Col. Hersey said: That, gentlemen, is quoting the price down to quite a moderate sum. Now, I will give you this little bit of advice: If you cannot raise prunes that run better than 120 upwards, you had better not raise them, except you keep a good stock of pigs to feed them to. They make very good hog feed. [Laughter.] And if you have more prunes than you have hogs to feed them to, you can dry them; for with a reasonable amount of cooked food, hogs will thrive on them very well in that form. I have received from one man this year three cars of prunes, and I think that out of the 39 tons, there are about 2 tons that ran from 80 to 90 or 90 to 100, and the other 37 tons ran from 100 to 180 to the pound. Unless that man can raise better prunes than those, the sooner he goes out of the prune business the better it will be for him; and while he is benefiting himself by going out, he will benefit all the rest of us, because to throw such prunes on the market is a damage to every prune grower in the State. If I sell these seven cars of prunes at 1¾ cents, they go East and go into the hands of hundreds of persons; they go into the show windows, and are advertised at six pounds for a quarter, as California prunes; and people without any knowledge of prunes buy them, but they never will buy any more. That shows you some of the difficulties that we have to deal with in our valley. And that sort of difficulty is met with in all parts of the State. We have to sell our fruit precisely as you in other parts of the State have to sell yours. If a man comes from San Francisco to our warehouses or to our Exchange, and wants to purchase prunes or peaches, and we ask him, for instance, 4½ cents for four sizes of prunes, or 5 cents, as the case may be, he tells us that he can buy them up at Santa Rosa for 4 or 4½. We say in a respectful way, "Go up and buy all you can at that price. We have none to sell." And perhaps the next man that comes will say that

Sonoma or Vaca Valley has any quantity of prunes which they will sell at a cent a pound cheaper than we ask for ours, and if it comes to a question of apricots, they will sell a first-class cot for 5½ or 6 cents, such as we are asking 7½ for. Of course we understand, and there is no earthly object in a man's buying our fruit at 7½ cents if Vacaville will sell at 6. And the next man has perhaps been down through Fresno, and he comes back without purchasing. And he goes around saying that he can get all the peaches and all the cots he wants at Fresno at 1 to 2 cents a pound cheaper than he can get them from us. And we can see no reason why any man should come to us and pay a cent or a cent and a half a pound more for fruit when he can buy as good a quality and all he wants at other places. And so from one year's end to the other we are constantly plied with such reports from different parts of the State. You know how slow we are down in Santa Clara Valley. The Almighty has made us so. We conform to the nature of our being and the nature of our surroundings. We are four weeks behind other parts of the State. The fruit at Vacaville and at Napa and at Fresno and in other parts of the State down south matures about four weeks earlier than ours, and is dried and ready for market sometimes before ours is gathered. Therefore, you get earlier sales of your fruit. We do not expect to compete in these early sales. And yet Eastern people are so uneducated with regard to conditions in our locality that they insist that we shall ship them apricots in June or early in July, when the fruit on the trees is hard enough to use as bullets to shoot squirrels or larger game. Now, we have no way of meeting such competition as that. What we would like to have you people do in different parts of the State, is either to sell all out at those prices, early, or else ask a bit more, so that when buyers come to us they will not stand on a quarter or a half cent, as they do. When it comes to the question of prunes, we think that perhaps we raise a little the best prune in the State. And yet I have to admit that I have seen prunes grown in some other parts of the State which are as good as we raise. And I have seen some prunes raised in our county that I think could be beaten in nearly every part of California. [Laughter.] Sometimes we have extreme heat that matures our fruit a little too soon. These are some of the difficulties that we have to contend with, but they are not all. From one end of the country to the other nearly every man who sells prunes has a broker or commission house through which he does business. By this mode of handling, concentration of product is impossible, and dealers as well as growers are forced to compete against each other. This tends to keep prices at a figure lower than that warranted by the law of supply and demand. There is another difficulty. In Oregon and Washington they are producing a large and fine appearing prune, and one that sells well on the market. They have got a little more acid in them than ours, and some people like them much better than they do the sweetness of our prunes. This is legitimate competition. But competition which is caused by lack of concentration there is no necessity for. I believe that consignments are the bane of the business. Of course the alternative follows, that if we do not sell on consignment we must sell for spot cash, or we must sell f. o. b. in San José, or Sacramento, or San Francisco, or other terminal point. Our produce is increasing to such an extent that we must organize for self-protection or go to the wall. I want to say this for the commission houses: Every commission house, unless it is limited to a certain price, does its whole duty when it gets the full market price for fruit consigned to it, whether the price be 2 cents or 5. Now, incidentally, I am going to say something with regard to coöperation: and that is, that without coöperation there can be no concentration of these various supplies of fruit throughout the State. Without coöperation fruit cannot be placed in a position so that advances can be made on it and it can be held until there is an opportunity to sell it for something like a reasonable price. Without coöperation it must be sold at such prices as will tend to break the market. Without coöperation it must be sold by promiscuous consignments. Take, for instance, the outlook for next year. Instead of raising from 800 to 1,000 carloads of prunes we may raise 2,000. Suppose we are able to sell 800 in the early part of the season, and there are left 1,200. If we should put one half of these, or 600 carloads, on the market, we may reasonably expect that the price of the four sizes of prunes will not be above 2¾ or 3 cents in the Eastern market, and that the class of fruit named in the dispatch which I have read to you will be absolutely worthless, because the other will be so cheapened that no person will think of buying it at any price. I think concentration through our fruit exchanges and through our drying associations will avert this threatened calamity very largely.

Mr. Motheral: I would like to ask this gentleman how many carloads of prunes are sent out from this State annually.

Col. Hersey: Last year there were 55,000,000 pounds produced on the Pacific Coast, which made over 2,200 cars. This year there will be not to exceed 1,000 or 1,200.

Mr. Adams: Five hundred and eighty-two had gone on the 15th of this month.

Col. Hersey: I can say this, that in our valley, which has raised by far the largest quantity of prunes of any locality in the State, we figured that, up to the 3d of November of last year, there were 587 carloads shipped in excess of what were shipped this year up to that date. And we have on hand in our valley less than half as much, after this small shipment, than we had last year at the same time.

Mr. Motheral: I asked the question for the purpose of instituting a comparison between the prune product and the raisin product. There has been nothing said, so far as I have heard, upon the subject of coöperation in the raisin interest, in which Fresno, Tulare, Kings, and Kern Counties are interested. Last year our vineyards were not all in full bearing, and we sent out 3,900 carloads from the State. This amount, at $1,000 per carload, which is about what it brings, would aggregate somewhere between $4,000,000 and $6,000,000. This is one of the great fruit industries of California, and we have had more trouble in handling it than has been met with in perhaps any other kind of fruit. The trouble is because we cannot get the raisin producers to understand the importance of coöperation, to understand the necessity of standing together and pooling their interests. We have had a class of men there called commission brokers. A great many of the farmers need money to enable them to pick their crops and to dry them. They need money to pay their taxes; they need money in their business, and they can't wait until the raisins are sold to get this money. The raisin brokers start out in May and the growers sell their crops to them. The brokers charge them so much for picking them, and so much for packing them, and so much for stemming them, and so much commission for selling them, and they advance the money in May upon the crop. By the time the raisins are dried and in the sweat-boxes we have a load to carry such as we cannot shake off. When the brokers get possession of the goods they pack them and ship them East upon consignment, attaching a draft to the bill of lading, and draw against the bill of lading. They are thus doing business on the farmer's capital. These commission brokers are in antagonism with each other—each one fighting for trade here and for trade in the East. It often happens that two or three carloads of goods are sent to a town that cannot take but one, and the fruit has to be sold for what it will bring on an overstocked market. Yet it has been found almost impossible to get the growers into any sort of a combination by which they can manage their own business. Now, this condition of things will be all over the State in relation to prunes. In our locality we are not in the prune industry yet; our trees are young; but that country can raise twice as many prunes per acre as any part of Santa Clara Valley that I was ever in. They have got the largest raisin vineyards in the world, and they have got one of the largest prune orchards, if not the largest. When those trees come into bearing, unless we can form some sort of an organization by which we can coöperate for the purpose of handling, we will be in the same position in regard to the prune industry that we are to-day in regard to the raisin industry. I have talked to the raisin growers time and again. But it seems they can never be got to see the necessity of standing together. I have become discouraged and disheartened. Any plan is better than that of consignment. This year we undertook a plan by which we thought we could get out. We tried to mortgage our crops, but the banks would not advance money on then. Then we said that we would give a bond and bind ourselves to hold prices up and not to ship the goods except at such and such prices. The growers put up bonds of $10,000 apiece and we got 1,800 cars into the combination, but farmers holding 1,200 cars stood out and broke the matter up, when we thought we had it all secured. Now we are at sea, with no price at all upon our fruit, every man coming in and selling for what he can get. That is the condition of the raisin business. You have been talking about prunes and other dried fruit; but unless you can get up an organization that will embrace the whole State, your efforts will not accomplish much, because some farmers have more fruit than they have sense. I fear it will come by and by to a question of the survival of the fittest. That will cut me out, and I don't like it. [Laughter.] Now, if there is any man here who can say something or do something that will wake these farmers up to the necessity of coöperation, I would like to have him get to work. Something has got to be done, and done this season. We cannot put it off another year. Any one of these plans which have been suggested is better than none. If the raisers of fruit had a little common sense and would stand together, they could command the markets of the world; they could send their goods to Europe, to Australia. But without combination, we have got to look bankruptcy in the face. We in the raisin industry are going there, sure, unless we form some combination that will save our raisins. And those who are in the prune industry are in the same fix. Now, you may think

I am talking very earnestly. When a man sees his mortgage growing bigger and bigger every day he can't help talking earnestly. The California farmer does not appreciate the condition he is in. He has got the world by the throat if he knew it, and it is nothing but the want of the appreciation of his power that keeps him poor as a slave. He makes the wealth of the nation, and then he seems to be satisfied with taking a contemptible portion of that wealth as his, and allowing the other fellow to enjoy the remainder. I am tired of it. And, my friends, I will tell you that I wish I had a voice loud enough to send all around these United States of America to wake up the wealth producers of the nation to a sense of their importance and their power. [Applause.] It does not seem impossible to get the producers to see their interest and to get them to stick to some plan by which they will secure that interest. Of all classes, the farming class seems to be the most difficult to form an organization among. And I am one of them. I have found it difficult to get even three men to stand in line long enough to count them. Our attempt at organization failed because 1,200 carloads stayed out and but 1,800 came in. The first thing we knew those 1,800 who were in were selling their goods in the East on consignment. Now, gentlemen, I am in for anything on earth. [Laughter.] And I think our people down where I live will be, after their experience of this year. If you will not take us into this dried fruit arrangement or into a fruit arrangement by which raisins can be included, some of us have made up our minds to organize an independent Raisin Exchange. We have determined to see what can be done by an independent organization. Lands in our country that have had $300 an acre expended on them, cannot be sold to-day for more than $40 or $50 an acre. That is the condition we are in, and we are growing worse. Values are depreciating. There are men who to-day have $50,000 worth of property over and above their debts, who if they were closed out by the mortgages upon their places, would be in the middle of the road without a home or a dollar. That is the condition of things with the farmers in that country. I don't know but it is so in the rest of the State, but I do know it is our condition down there. And I tell you, friends, it is our own fault, for not standing together. I do hope that something will be done at this convention that will place the fruit growers of California upon a basis which will enable them to save this great industry from destruction. [Applause.]

Mr. Adams, of the committee to whom was referred the resolutions offered by Mr. Weinstock, reported favorably upon them, and recommended their adoption.

F. M. Righter, of Campbells: We do not make this report just now for the purpose of cutting off discussion in regard to coöperation in the marketing and sale of dried fruit. I do not know whether you have discussed that question as much as you desire. But to my mind there is a system of selling that we have never touched here, for the reason that we seem to be afraid of it. It seems to me that system has an element in it that is very essential to success, and one that we will find ourselves obliged to make use of if we achieve success. By that plan we will be enabled to sell at less price, and yet get more money than we get now. It enables the one who buys of us to buy at a lower price than he is paying now, and yet we get more money for our product.

I believe that all of our dried fruits should be sold by the Exchange method, for the reason that both the buying and selling can be done by this method at the least possible cost to both parties. The present ruinously low prices of dried fruit render its adoption an urgent necessity. It is not only by far the cheapest, but one that secures to the seller the highest price the buyer will pay. No seller can obtain more. For the benefit of those who may not be familiar with this method, permit me to very briefly, and as far so I may be able, clearly explain it.

As the Producers' Exchange, at Elgin, Illinois, known as the Elgin Board of Trade, is not only a very simple organization, but also the most successful one of which I have any knowledge, I will therefore refer to it in exemplifying this method.

In the room where this Exchange's sales are made is a large blackboard divided into columns. In the proper column, opposite the name of each factory, is written the quantity, quality, and the selling price, if it is given, if it is not given the letters "op" are written instead. The letters "op" mean it is optional with the factory whether the bid is or is not accepted. Sales occur weekly and occupy one hour. The sales are all f. o. b. net spot cash. The seller's responsibility ends when he puts the goods sold on board the cars. Nothing is consigned. There is no storeage, insurance, or commission paid on products sold by the Exchange. The Secretary does the selling and makes a record of the sale. The following will further illustrate the matter:

Blackboard—Advertising Space.

Offered by Factory—	Quantity of Butter—Tubs.	Quality.	Asks.	Bid.	Sold to—
Genoa	25	A1	28 cts.	28 cts.	E. L. Newberry, Chicago.
Cobb	25	A1	op.	28 cts.	W. E. Lawrance, Chicago.
Woodstock	40	A1	op.	27¾ cts.	J. D. Stockton, New York.
South Elgin	60	A1	28 cts.	27½ cts.	S. R. Udell, Boston.
Concord	30	A1	28 cts.	28 cts.	S. Sands, Cincinnati, Ohio.
Hanover	25	A1	op.	28 cts.	W. D. Stover, Indianapolis.
Elkhorn	28	A1	28 cts.	28 cts.	L. Wood & Co., San Francisco.

If the seller accepts the price bid his product is checked off; if not, it remains there to be sold at a subsequent sale. If the buyer is not present, he is usually represented by his broker, and the sellers are generally present or are represented by the Secretary, or some one else. The buyers pay their brokers ¼ cent per pound for their services.

The Exchange expenses are equally borne by the equally benefited parties; namely, the buyers, sellers, and other members. In this Exchange about two thirds of its members are producers. Each pays $2 annual dues. There are but two salaried officers in the Exchange; namely, the Secretary and Sergeant-at-Arms. The former receives $250 a year for his services in making and recording the weekly sales, and the latter $25 a year. The principal portion of the Secretary's salary is paid by a large number of newspapers for reports of the Exchange's weekly sales. For these weekly reports each paper pays him $1.

The cost of conducting this Exchange, at least to the buyers and sellers, is next to nothing. For example, during the year 1892 its membership was 278. Each member paid $2 annual dues, making in the aggregate $556. The entire running expenses were paid out of this

$556. Since the membership consisted of about two thirds producers, the entire cost to the producers was about $372. At this pittance of cost the producers sold products through the Exchange that year to the amount of $8,315,286 22; the average price of butter being 25⅓ cents per pound. The membership during 1893 was 293 and the sales were in the aggregate $8,639,057 87; the average price of butter that year was 26 cents per pound. Notwithstanding the great financial panic of 1893 the producers sold more butter and at a higher price that year than during the year 1892. Like other Exchanges, this one has a Committee of Arbitration and a Committee of Appeals, both jointly selected by the buyers and sellers. The decisions of the latter committee are final and binding on both parties. These two committees settle all matters of dispute relating to Exchange sales.

In 1893 the prune crop of Santa Clara Valley was, in round numbers, 40,000,000 pounds. The usual commission paid for selling dried fruit in this State is 5 per cent, or one twentieth of the gross value of the crop. Hence, 2,000,000 pounds, valued at 5 cents per pound, or $100,000, was paid for merely selling that year's prune crop. Add to this the cost of selling the apricots, peaches, and the other dried fruits of this valley and the sum is enormously large. It goes without saying that the sum is a great deal larger than the producers ought to pay, and more than I believe they will long continue to pay. It is certainly far more than would be required to sell all the dried fruit of the whole State, raisins included, if sold by the Exchange method. By this method the fruit can be sold for the cost of selling it, the fruit growers paying only their *just* proportion of that cost. This would leave in the fruit growers' pockets a large sum that is now taken out to pay for selling. Those to whom you are paying this very large sum for this very small service will urge you very earnestly not to make any change. If the Exchange method promised them more than the one now employed they would as earnestly urge you to adopt that method. In other words, they are impelled solely by their interests, not yours, as you must certainly know.

If you adopt the Exchange method you will do so to protect your own interests, and not to increase the income of others by decreasing your own. It is not a love and affection matter on the part of either party, but on the other hand, is simply pure, clean-cut, unalloyed, cold-blooded business on the part of both. It is business on the part of those who are now selling your fruit to the jobbers to take for their services all the traffic will bear, and it is business on your part to see that the traffic bears as little as possible. I do not blame these people for buying your fruit at the lowest price and then selling it to the jobbers at the highest price. Neither is the jobber at fault for buying at the very lowest price. If one jobber buys at a lower price than the others, he is thereby enabled to force the others to lose either their money or their customers, as they may choose. They are not to blame for beating down prices; the fault is not in them but in the method of sale. Put them all on the same footing as buyers, and they are then on equal footing as sellers.

The adoption of the Exchange method can only be prevented by the fruit growers. If the fruit growers will not permit themselves to be used to beat the fruit growers, then they cannot be beaten. Those who wish to keep you from doing anything in this matter, affect to believe that you are so ignorant, dishonest, jealous, and suspicious that you will not trust each other, and hence cannot coöperate. Do you suppose they have a better opinion of themselves than they do of you? What is your opinion of them? Better than theirs of you? Many fruit growers are either retired business men, or those still actively engaged in business. Are they less capable and honest than men not producers? Are they not more in sympathy with the fruit growers than those not engaged in that business?

Other things being equal, is it not wisest to trust those whose interests are not identical with yours, or, in other words, to trust yourselves rather than those not in sympathy with you? The reasonable presumption is that you will do your own business at a cost, rather than pay a great deal more to have others do it for you. You are not seeking means of keeping your income down nor of making a further reduction.

The fruit growers' coöperative associations of this State prove that you are trying to decrease your expenses, and thus increase your income. They also prove that you do not lack the capacity to do your own business, and are not afraid to trust each other both in the preparation and sale of your products, and further, that you can do something toward self-protection. The truth is, that you have not only shown the ability to protect yourselves through these organizations, but also to protect the wholesale buyers and jobbers throughout the entire country. While the prices of dried fruit have been and still are ruinously low, no one pretends to say how much lower they would have gone had it not been for the course pursued by these organizations. They steadied and maintained the prices in spite of all the efforts made to force them lower. They have been giving and will continue to give the jobbers well nigh a guaranteed price, and that, too, in an off year. By this course they hoped to obtain for this year's labor at least a poor living. It was the only course that gave hope of ever securing that much. Had they acted less wisely, you would doubtless not have obtained for your fruit the cost of production.

Before the fruit of the State can be sold at the least possible cost it must all be accurately graded, thus producing grades that will be identical throughout. Type samples of each of these different grades can be furnished to every carload buyer in the United States and Canada, as well as to all large foreign buyers. With these samples before them they can buy through the Exchange understandingly, even though not represented at the sale either in person or by a broker. The Exchange would, of course, have to guarantee the fruit sold to be of the same grade as the sample. By the aid of a modern fruit grader the fruit can be quickly, cheaply, and accurately graded. This done, the Exchange would risk but little by guaranteeing the fruit.

The Exchange method keeps the buyers and sellers in the closest possible touch, which relation is very important to both parties. The producers are in position to give the facts relating to the supply, and the jobber's position enables him to give the facts relating to the demand. The law of supply and demand may be relied upon to govern the price, when both parties know about what the supply and demand are. For either party to attempt to deceive the other with reference to either the supply or demand is not business, since the effort serves to accomplish little, if anything, more than to destroy confidence in each other.

It is now known that the producers' estimate of last year's fruit crop was worthy of credence, and there is ample reason to believe that this year's estimate will prove to be. Last year's prune crop was estimated too high, and so also was this year's in the early part of the season, but as soon as a close estimate could be made, it was done and published, so that even jobbers might know as fully as the producers what the supply is. This was done on the theory that to establish and maintain relations permanently satisfactory, business must be conducted on right lines.

In order to compare the cost of the present method of sale with the Exchange method, I will again call your attention to the Elgin Exchange sales of 1892. This Exchange's sales during that year amounted in the aggregate to $8,315,286 22, and they cost the producers $372. Had dried fruit of that value been sold for California producers it would have cost them 5 per cent of that sum, or $415,764 31, or $415,392 31 more, being more than 1,117 times as much as it cost the Elgin producers.

The facts and figures relating to the Elgin Producers' Exchange were obtained directly from that Exchange, and hence are entirely reliable.

Mr. Adams: I would simply add to what I said before, that that course of action recommended by the committee does not call for any money, but it does call for that sort of determination by the fruit growers that their fruit shall be shipped in that way. Wherever there is opportunity for any man to exert his influence or extend his patronage in any way to support that plan of action, his influence should go in that direction. The actual carrying out of the resolution will necessarily be committed to that class of shippers who draw bills of lading; not to the smaller shippers like myself, who must turn our fruit over to some coöperative association or to some larger shipper to take care of for us. And the grower or the association who represents me in that way will join with the organization of larger growers, which will see that the shipments are divided and distributed in accordance with the known capacity of the markets. And for the purpose of permitting such concert of action, those who are intrusted with the shipment of the fruit of the small growers must unite with the larger growers in such organization. And we assume that the thirty or forty or fifty gentlemen who are the largest fruit growers of the State, will themselves provide the machinery recommended by the committee. We will not go into details, because those who are concerned in the organization as large growers can provide the details. Those who are here present should pledge themselves to its support.

On motion of Mr. Fowler, a rising vote was taken on the adoption of Mr. Weinstock's resolution, and it was carried unanimously.

Mr. Adams: Mr. President, I offer this resolution:

> The members of this convention hereby pledge themselves to give such association, when formed, our earnest and heartiest support.

I will explain what I mean by that. I mean that each individual member will take it up and push it. In order that there may be some expression of opinion it was suggested by Prof. Fowler that those who are in favor of the resolution should manifest their sentiment by rising.

And I move that those members who do so pledge themselves, their earnest and hearty support, manifest it by rising.

Mr. Adams' resolution was unanimously adopted by a rising vote.

The Chair announced the following named gentlemen as the committee recommended by the report of the committee last read: N. R. Saulsbury and E. T. Earl of Sacramento, J. D. Matthews of Newcastle, David Reese of Florin, and F. M. Buck of Vacaville.

The convention here adjourned to November 21, 1894, at 9 A. M.

TRANSACTIONS OF SECOND DAY.

WEDNESDAY, November 21, 1894.

[Chairman BUCK in the chair.]

TRANSPORTATION AND FREIGHT RATES ON GREEN AND DRIED FRUITS—(RESUMED).

GEO. D. KELLOGG, of Placer: I beg to introduce the following resolution:

WHEREAS, Experience of the past has clearly demonstrated that the great horticultural interests of the State have been seriously crippled by excessive transportation charges on fresh fruits to our legitimate markets; and whereas, it being a fact that other large fruit districts of the Pacific Slope do obtain a much better transportation rate, thus bringing our interests into an unequal and unfair competition against any such fruit-growing sections; therefore, be it

Resolved, That the Committee on Transportation and Freight Rates, which has been appointed by the Chair, in accordance with the programme of the convention, is hereby directed to *confer at the earliest practicable moment* with the transportation lines, to secure a sufficient reduction in transportation rates to place us on an equal footing with other fruit-producing sections of the Pacific Slope, and at a rate that will enable us as growers and shippers of green fruits to continue our business on a living basis.

A FRUIT GROWER'S IDEAS ON TRANSPORTATION.

By EDWARD BERWICK, of Monterey.

When a preacher rises to exhort the brethren he usually selects an appropriate text. I have chosen mine from a discourse by Mr. W. H. Mills, the Land Agent of the Southern Pacific Railroad. Said he at the October meeting of the State Board of Trade: "The other day a man came into my office overjoyed to find that the net return of a carload of fruit was 25 cents. I failed to see the reason for his joy, when he explained that it was the first carload that had been shipped for some time which had not shown a loss of from $25 to $50."

One of the first duties of a preacher is to be sure the text he is about to expound is true. I feel sure that only too many fruit growers here to-day have had its truth driven home by similar bitter experience. Mr. Mills' visitor, you too well know, spoke the truth. What, then, became of the money the fruit sold for? It went where the wealth of the country is all gradually going—into the coffers of the octopus. What are you going to do about it?

The Los Angeles Fruit Growers' Convention of 1893 passed a resolution commending to horticulturists the careful study and consideration of the question of the nationalization (or Government ownership) of railroads. I do not doubt but that all of you have obeyed the recommendation. The study of railroad affairs has been most urgently and unpleasantly forced upon you. The railroad strike of last July caused loss and hardship to almost every citizen of this republic, whether he lived in a palace or a poor-house. Individual fruit growers counted their losses by thousands of dollars. Not only were goods in transit ruined, but millions of pounds of fruit destined for shipment had to rot in the orchards; while the stagnation of trade and consequent depression have ruined the whole season's business.

Now, though I gladly seize this opportunity to express my sympathy with you all in the losses you have sustained, I am *not* here to cry over spilt milk.

The question all naturally ask themselves is, "How can we avert this evil in future?" "Is there no way to prevent its recurrence?"

Let me suggest my plan. If I want to send a pound of goods from Monterey to San Francisco the Southern Pacific Railroad will charge me 25 cents to take it as far as their depot at Fourth and Townsend Streets, whence the consignee has to fetch it. But I am a member of a coöperative association. My association will take a pound of a certain kind of goods from Sacramento to New York for one cent, and deliver it at the house of the consignee. Or for 12 cents they will take a pound from Sacramento to Mexico, or the West Indies, or Newfoundland. This coöperative association has its cars on every main railroad, and we call it the Post Office Department of the United States Government.

Now, it has for years occurred to many of us that it would be a very desirable thing if we could induce the members of this grand coöperative association to take in hand all the transportation of the nation. There seems no valid reason why those high-roads of the nineteenth century, the railroads, should not be as much the property of the people as are the old high-roads where rails are not used.

There are very many reasons why they should be apart from the regularity of the service and the freedom from strikes.

Cheap transportation is the life of commerce, and it is of first importance to the well-being of a community that it should be performed at as nearly the cost of the service as possible. Railroad companies, on the other hand, insist on a basis of "all the traffic will bear." This, as I said last year at Los Angeles, usually means all the producer will bear, and frequently that is all the tree will bear. The railroad plausibly calls this the "value of the service." What we want are rates based on the cost of the service.

Here's an example that a railroad conductor once gave me. Said he, "I have hauled out a train of forty cars of produce from Santa Maria to San Francisco, for which the railroad received $100 a car. The total cost to the company did not exceed $3 50 per car, including everything, from interest to axle grease." The farmer could not get his grain hauled for less, so he had to pay the "*value* of the *service*," $100, while the "*cost* of the *service*" was only $3 50. I think we all agree that while the "*value* of the *service*" may suit the railroad pretty well, the "*cost* of the *service*" would be good enough for the producer.

One more example from Los Angeles. Some years ago potatoes were high priced in Arizona. In Los Angeles they were cheap. A shipper saw a way, as he thought, to make some money. He went to the railroad office and asked their rates on potatoes to Arizona points.

"What are they worth here?"

"Half a cent per pound."

"And how much are they worth in Arizona?"

"Four cents and a half."

"Our rate, then, is four cents per pound."

This rate, as you see, was based on the "value of the service," or in other words, "all the traffic will bear." It is the system of the robber barons of old.

> "The good old rule, the simple plan,
> That they should take who have the power
> And they should keep who can."

The shipper assumes all the risk, the railroad consumes all the profits. No car is dispatched until the shipper signs a "release and guarantee." The railroad company thus holds somewhat the position of a pool-seller at a race. No matter who wins or loses, he gets his commission. Keep in the game long enough, the railroad gets it all—spot cash—no bad debts! They divide the business with you, truly; they take the kernel and give you the shell; you fatten the beef, they eat it. How does your share of the transaction suit you?

It was stated as long ago as 1864, that a ton of goods can be conveyed 100 miles for 33 cents—about $10 a ton to New York from San Francisco—and a passenger 100 miles for 8 cents. Modern improvements have still further reduced these figures. And now, a ton can be hauled 100 miles for 20 cents; San Francisco to Chicago, $4. It was also shown, at the same date, that freights and fares, within certain limitations, can be raised or lowered with comparatively little difference in profit to the shareholders of the road. Traffic increases or decreases according to rates charged.

It was hoped that competition might be relied upon to bring down rates to the lowest possible figures. Competition, however, has proved but a broken reed. Competition can never give satisfactory results, for very obvious reasons. When three roads are built and operated to compete for the traffic that one road could carry, there is much lost and little finally gained. There is a three-fold capital claiming interest, three-fold the land condemned as a roadbed and withdrawn from production, three-fold labor and fuel, three-fold wear and tear of rolling stock and roadbed, three-fold the buildings, three-fold staff of presidents and managers and clerks and agents, three-fold expenses of advertising, and three-fold taxation. And who ultimately pay this three-fold expense but the shippers and travelers who patronize the lines? Were the whole business done by one line, it could obviously be done at about one third of the cost, a thing Mr. C. P. Huntington is ever trying to impress on the public. So, I say, that competition is a failure. It is a failure for another reason. Rate wars may temporarily reduce freights and fares to cost; but, as the President of the Louisville and Nashville Railroad once said, "All wars must end in peace, and peace between rival railroads can only last when there is some community of interest. That may obtain in two ways—by a pool, or by consolidation under one ownership. The best that a pool can accomplish, after all, is but a partial community of interest, and, where the rivalry is bitter, consolidation is very apt to result. Now, let pooling be forbidden, or let it fail, and consolidation must be the inevitable result. It will become simply a commercial necessity, as resistless as the downward flow of the Mississippi to the sea. It may be temporarily checked in any manner theorists think good, but it will have its way in the end." These are also the views, I believe, of Mr. C. P. Huntington. In other countries, statesmen foresaw that this must be the issue of the railroad question. As early as 1834, Mr. Ropier, the Belgian Finance Minister, used these words in reply to those who wished to rely upon competition: "No! The state of affairs in which competition arrests the evil does not apply here; whoever holds the railways holds a monopoly, and that should only be allowed to exist in possession of the State."

Gladstone, in 1844, asked Captain Laws, a witness before a parliamentary committee, this question:

Q. "Does the consideration that the railroad companies possess, in many respects, something in the character of a monopoly, enter materially into the grounds of your opinion?"

A. "Yes, it does; and not only monopoly now, but every extension is calculated to increase immensely that monopoly and *continuation of monopolies.*"

Friends, you all know enough of current history to be aware how fully these prophecies are being literally fulfilled. You know that these monopolies are hourly growing more gigantic and tremendous! You know that they are hourly grasping not only more wealth, but more power, until it is asked on all sides whether the people shall own the railroads, or the railroads own the people.

What are you going to do about it? Is the independence your fathers bled and died for to become a shadow? Is it to be a reality or simply a name and a memory? The freedom they fought for was simply freedom from the oppressions of monopoly, the very same monopoly that now threatens to enslave you—the monopoly of power, of privilege, and of wealth, in the hands of a few. Monopoly then masked under the guise of Divine Right and Kingly Privilege. Your kings to-day make no specious plea of divine right, nevertheless they tax you a hundred fold more than King George ever dreamt of taxing your forefathers.

The remedy is simple. Exercise those powers of self-government your fathers bequeathed you. In the first place know what you want. At present you permit your politicians to "arrange for the public their wants and desires." Your politicians know exactly what they want; and they fool you into ministering to their wants. You even permitted them last election to pen you like sheep in the party fold, and to tar you with the party brush, before you might cast your vote at the primaries, the most important of all elections. Each of the three parties imposed this test for those voting: "Will you, at the coming general election, vote for those nominated by this party at the coming State and County Conventions?" So that, before a single candidate was nominated, or perhaps even the platform framed, the voter pledged himself to vote for a set of men whose names he had never heard. Such party docility, or servility, eclipses that of that dyed-in-the-wool partisan who boasted that he would vote for a "yaller dorg" if his party put it on the ticket. You might have had a whole ticket-full of "yaller dorgs," and worse yet, a platform full of "yaller dorg" planks and been bound to swallow them all. If you would be free from the chains of monopoly, you must first free yourselves from such degrading chains of party. I congratulate you that last election was a scratched-ticket election. Then you must send men to Congress who will represent you, and not the railroad. Forty years ago Lowell wrote:

"Wen one's chose to Congriss, ez soon ez he's in it,
A collar grows right round his neck in a minit."

Friends, such collars are still forged. The golden chains of monopoly still lead captive those who had pledged themselves to serve the people. Before election we own them, but somehow, afterwards, they always sell us. And what are you going to do about that? If a man makes a solemn promise to marry a woman, and breaks that promise, you make him pay an enormous fine. If another obtains money under false pretenses, you send him to your State's prison. Yet you suffer men who obtain not only money, but honor and preëminence, under false pretenses and false pledges and promises made to the whole community, to go scot free. Enact laws by which a recreant representative shall be as guilty, yea, ten-fold more guilty, than the vilest criminal. He is guilty of the unpardonable offense of treason against the republic. Let public opinion and the laws so brand him. Let the weight of his iniquity burn him. Next, when you are all agreed that you want the Government to own the railroads, you have got to get your National Government to realize that it is simply an institution for carrying on the people's business in a business-like way. At present Congress seems to be regarded as a field where fledgling orators may essay flights of speech and fly verbal kites.

Take an instance. I'll venture to say that not one business man in the whole nation who has a heavy stock of goods for which there is little or no demand, would buy more on a falling market, or would debate the propriety of so doing for five minutes. Yet our Congress for three months worried that threadbare proposition in debating what is called the silver question, and could not find a day for the Nicaragua Canal. Again, suppose the directors of some company met to transact business, and one came loaded with a pile of books and newspapers, and began to talk and read, and talk and read the whole day, *on purpose* to waste the time and delay the business the others wanted to attend to. What would they do about it? Would they not unanimously fire him out as a lunatic? Yet this is the course daily followed by members in Congress, and they call it "guarding the rights of the minority." "Stealing the rights of the majority" would be a more appropriate description of such unspeakable folly. If the people want to be free from monopolies they must adopt modern methods of conducting the nation's business, and give up antiquated methods, whose only commendation is their age. Does a merchant or a banker stick to old-fashioned, cumbrous, inefficient business methods simply because his great grandfather used those methods? If he did every one would call him an unprogressive old fool, or a silurian, or a fossil. And they'd be right. Then why permit silurian methods in our national business?

But, friends, if we want to overcome monoply, and hand down to our children unimpaired the liberty our forefathers won for us, we must emulate the virtues of those forefathers. We must learn that faction and party and all things that tend to divide mankind are mischievous. We must learn to fight the devil with fire. The railroad wields its enormous power because it "pools its issues." We must pool our issues. "Union" must be our watchword. "United we stand, divided we fall!" And if in this fight against the railroads we fall, we shall be ten-fold more the slaves of monopoly than ever our fathers were of King George. Even now we speak with bated breath lest they should cinch us tighter. Even now King George's tea tax is not a circumstance to the taxes the Southern Pacific Railroad imposes on us at every turn and corner.

Mr. Block: Mr. President, I rise for information. The resolution offered by Mr. Kellogg gives the intimation that fruit has been more cheaply carried from Oregon to the East than from here to the East. If that is so I would like to know it, and would like to have a thorough discussion on the matter, although I hope that all political references and offensive expressions will be omitted. Let us have facts. I have been told that fruit has been shipped from Oregon at the rate of $150 a carload. I hope that this matter will be sifted down so that when we criticise we can criticise justly, and I trust that Mr. Kellogg will give us his authority for the intimation contained in his resolution.

Mr. Kellogg: There are many persons who are better posted on this point than I am, but it is understood to be a fact that green fruit rates from Portland to Minneapolis are $150 a carload. And I want to say further, I am informed that charges for refrigerator cars are very much less from Oregon than from California. I understand that the charges are but $25 for refrigeration, but I have no positive knowledge on that point.

Mr. B. Leonard, of Sacramento: I would state for the information of the convention that I have some knowledge of fruit rates. I was engaged two years in shipping fruit from Eastern Washington to a point on the Snake River. The fruit rate was a cent and a quarter a pound, the same as from California points. But the Union Pacific owned every one of the refrigerator cars and made no charge for that except the actual cost of the ice, which was very low, in the neighborhood of $5 a ton. I think the average cost of refrigeration from those points was probably not over $25 or $30 a car. I understand that the Northern Pacific made the same arrangements, although I had no dealings with them. That was two years ago this summer.

Mr. Kellogg: I understand that the rates of freight have been reduced since that time to $150 a car, and I think I have the evidence of that fact.

Mr. D. T. Fowler: I am from Fresno. Down there we have the transportation problem. We all know the specious promises that were made with regard to moving our fruit from California to Chicago, and the promise of time that was given at the former convention at Los Angeles. It has taken from two to over four days to bring a carload of fruit from Fresno to Sacramento. Every fruit raiser knows that if a car is loaded at Fresno with green fruit and moved to Collis or Tracy and laid over there until some connection is made, and then moved to Sacramento, consuming a period of from two to four days' time, that it is of material injury to the fruit. We cannot expect under these conditions to put our fruit into the Eastern markets in good shape. We have to pay excessive freight rates just the same, and the railroad company say they cannot do the work at a less figure. This year our mules are doing the work and competing with the railroad. [Applause.] Last year from the town of Butler, six miles out from Fresno, the line of road passed by the place that I am manager of. Five dollars a car was what was charged on that road for coal and lumber, but when I wanted to ship some green fruit to Fresno to have it packed, it was $6 a car. I went before Mr. Fraser, the Superintendent of that division, and asked him, why it was $6 a car, and he said, "That is the rate on green fruit." But I said, "I can land that fruit with my teams in Fresno for less money." He said, "I don't think you can." I then kept a carefully made detailed statement of the loading and shipping of two cars to Fresno, and getting the empties back, and compared this with the cost of hauling two carloads by team to Fresno—made out a detailed statement and put down every item of cost, and took it to Mr. Fraser and showed him that I could haul the fruit at a less rate by team. He said, "I can't question these figures, and it is a pretty hard showing, but I will send it to Mr. Smurr and see if I can't get the rate reduced." It was so sent. In a few days word came back that they would like to make a concession of $1 a car, but it would interfere with their rates in other places, and they could not do this. I said, "Very well, we will try to keep the mules alive." That was last year. This year when we have finished the season we will have hauled to town with those mules—because they have been kept healthy—about 300 tons of fruit, and not one pound has gone by rail from our place. [Applause.] Now, I think when the railroad cannot do that business in the matter of time, and in the matter of cost, and compete fairly with the mules, it is about time for us to ask the reason why. When we come to consider this question a little further, when we ask whether the railroad business is a profitable business or not, because this element of cost enters into the question, they tell us they cannot reduce our rate for fruit, and they cannot reduce the rate on fares. But to-day, as you have seen by the papers, we have made the experiment, and made it successfully, of hauling our fruits from Fresno all the way to San Francisco by mule team. And when we come to study the census of the United States, when we refer to what Henry Clews and Governor Larrabee have said on the railroad question, we come to the conclusion that the way railroads have managed their affairs in this nation and in this State, that they have been managed to the detriment of the people, but to the full benefit of the owners of the roads. I do not mean to say that the railroads have not been the means of great good, but I do say it is by reason of the special privileges which the people have given the roads, that they are enabled to impose these burdens upon the fruit-raisers. The other day we sent some fruit to Chicago, and it was good fruit, and sold at a fair price, yet when we came to sum up our returns, we found that 82 per cent of the returns was the cost of placing the fruit on the market, and the largest portion went to the railroad, leaving 18 per cent for growing the fruit and assuming all the risks. There is something unjust in this condition of affairs. This great industry is languishing in this State, because of these conditions, and we are here to consider them. And when we come to study them carefully, we find something like this: In the production of the wealth of the nation the different industries should have somewhere near their equal share in the division of the profits. But when we come to examine the census of 1890, we find these facts, that the railroads are capitalized at four billions of dollars; that the railroads have absorbed more than their just share of all the wealth gained from 1880 to 1890, as shown by the census of the United States. The industries of this nation under the census are capitalized at forty-eight billion dollars, outside of banking and manufacturing. The four billions has absorbed more wealth of the nation than has the forty-eight billions. And when you ask me why business languishes, I refer you, largely, to the transportation question. Freight rates are unquestionably excessive; but the railroad owns the States. They own this State, and they will own the next Legislature. And the fact is, that we may resolve, and we may resolve, but we have got to do something more than simply resolve before we can emancipate ourselves from these conditions. When we go abroad and look upon the railroad situation elsewhere, we see entirely different managements. Take, for instance, New Zealand and Australia. What do we find? Down in Victoria when the State bought the railroads, and paid a large price for them, and began running them, they had to settle the question of freights and fares. They reduced them to one fourth of the original rates. The Government desired to make but 4 per cent upon the investment, and they found that the road paid more than 4 per cent under Government management. And then they said that inasmuch as the revenues from the road went largely to the schools, that they would allow all children under fifteen years of age to travel free upon Government roads. But that did not reduce the profit to 4 per cent. Then they passed a law that all persons attending the schools and colleges should travel free; and this even did not reduce the revenue sufficiently. Again: Go to India, where the Government operates the roads. A gentleman is at the house where I am living, to-day, who has been doing business in India for years, and when he puts down the figures which he has to pay on carload lots that he has moved from the central portions of India down to Calcutta, I find that it does not cost half as much to bring freight very nearly fifteen hundred miles as it costs to move it from Fresno to San Francisco. And these roads are operated by English-speaking men. Again: Return to our own country and examine the public documents that are on file. Every one has access to these documents. Examine the reports of the Commission of 1876, and what do you find? You find that Mr. Wooster, Secretary of the Vanderbilt line of roads, when he was before that Commission, was asked by a member of that Congressional Commission: "For what can a passenger be carried from New York to San Francisco, first-class, upon a legitimately built and legitimately operated railroad?" And his sworn answer was promptly given: "It can be done with a profit, for $10 per passenger. and this would so increase"—and here is a great feature—"this would so increase the travel that it could soon be done at a rate as low as $5." Here is the testimony of one of the great railroad men of the nation. And, I might stand here and give illustration after illustration, if there were time. We are confronted with these conditions. But the day is coming when there will be a change. The people are thinking, from one end of the country to the other. And there is reason why they should think. For from one end of the country to the other business is languishing; your industry and mine has languished and is languishing under conditions that are imposed. It is the part of the railroads to so conduct their business that they shall not add to this terrible strain upon the people. When we take into consideration the fact that the railroads of this nation can be duplicated, as is stated by Henry Clews and Governor Larrabee, for $2,400,000,000; when they are capitalized, according to the census returns, at $4,000,000,000, and when they wish to make, and do make, under the Supreme Court decisions, freight and fare rates that will pay interest of 6 per cent on their watered stock, you have before you some of the reasons why freights and fares are far in excess of what they should be; because the railroads under their own valuations have been run up to about $10,000,000,000, and it is upon this valuation that they expect to pay 6 per cent interest. It is upon this estimate that freights and fares are fixed. This whole question is one that confronts the fruit growers of this State. We want cheaper rates, and the railroads can afford to give them. We want lower rates and quicker time. [Applause.] And the railroads should be compelled to pay some portion of their receipts to the fruit grower, where they have injured him by side-tracking his fruit, causing it to spoil. I could mention instance after instance where cars have been side-tracked and the fruit has been utterly ruined, but the fruit grower has had to pay the freight rates and the expenses just the same. There was no redress from the railroad company. And I do not believe there is a shipper here who cannot mention case after case; I do not believe there is a grower within the sound of my voice who has not in some measure suffered under these conditions. Now, what can we do? This is a difficult question. It is one requiring careful study of the conditions under which the railroads of this nation are operated. I hope before this convention is closed that some action will be taken expressive of the sense of this body which will appeal favorably to the best thought and feeling of the land. The best efforts of this convention should be given to this subject. Individually, I believe that there is but one way in which we can settle this question. When we look abroad among other English-speaking nations we find they have been able to solve the question. And I think that if other nations have solved the question we can solve it. If they can nationalize their roads and solve the question in that way I see no reason why we should not adopt the same solution.

One word on another branch of the question, and I have done. It illustrates another feature of the railroad question. Under our system in most portions of this State there are no second or third-class rates. Every one is obliged to pay first-class rates. Go to England and you find your man of business traveling ordinarily in a second-class car. Even your lords and nobles in England, when they go on business, travel most frequently in second-class cars. Here there are but few places where you can ride on a second-class car. It is not a general thing that you can do this. When I go down to Berenda and want to go to Raymond, a little distance of about twenty miles, I have to pay $2, and the round trip is $4. I mention this round trip of $4 for this reason: This gentleman to whom I referred a few moments ago traveled 4,000 miles over northern India, from Calcutta to Bombay, with a party of five, and the round trip was but $37. They took a retinue of servants with them, and when they got to Bombay it was necessary to send them back to Calcutta across India, and they went third-class. The railroad company transported them across that mighty India for $4 apiece. And they are not operating their roads for the purpose of making a loss, but for the purpose of making a gain. When we look at these facts we must come to the conclusion that there is something in the management or in the way expenses are rolled up that is wrong. I say that I believe it will ultimately be brought about by the intelligence of this people that the roads of this nation shall be owned and run by the nation itself. [Applause.]

Mr. T. W. Madeley, of Placer: Mr. Block has asked for the authority upon which the statement was made that the freight rate from Portland to Minneapolis is $150 a car. In the "Fruit Trade Journal, Dairy and Produce Record" is an interview with Mr. J. A. Shea, a wholesale fruit dealer in Minneapolis, in the course of which Mr. Shea says: "Never in the condition of the commission business have the common crops been so dear and the fancy products so cheap as now. The condition of the trade is paradoxical throughout. Products raised at home are dear, while the luxuries are so cheap that it is almost like giving them away. Potatoes are dearer than wheat and more expensive than fruit that is shipped all the way from the Pacific Coast. Onions are dear, and sweet potatoes are brought all the way from New Jersey, because the Illinois crop of sweets is practically a failure. The Oregon fruit trade developed slowly until within a period of about five years. I remember the first Oregon fruit received in Minneapolis. It was packed in heavy redwood boxes, nailed with big, heavy nails, and the fruit, though fine, was so poorly packed that it was difficult to find a market for it. Now we think nothing of getting five carloads of Oregon plums or peaches at a single consignment. *Oregon fruit reaches this market in about half the time it takes for California fruit;* the freight is *$150 a car less*, and above all, the fruit seems better suited to the market. The shippers understand their business now, and pack the fruit as well as it is packed anywhere in the country, and it usually arrives in this market bright and fresh." The article goes on to say: "Mr. Shea's theory is that the two transcontinental lines, the Great Northern and the Northern Pacific, in active competition for traffic, are largely responsible for the abundance of cheap fruit." In addition to that, I have been credibly informed that the railroad companies of the Oregon section take the question of refrigeration in their own hands, and they charge but $25 a car for refrigeration, whereas it costs us in this section $125. The article goes on to say: "In a year like the present the growers in Oregon are sometimes a little worse off than nothing upon some of their consignments." Take for example: A box of pears brings $1 25 in this market; the freight on it is 90 cents, the commission 12 cents, the box costs 13 cents, and packing the box 10 cents. This leaves no profit for the shipper, and no profit for the man who raises the fruit. A neighbor of mine told me Monday morning, just before I took the train for Sacramento, that his total shipments East were 14,000 boxes. The average returns to him from the other end were 19 cents. On that 14,000 boxes the railroad company received $7,000 for freight. The result of the shipment was that the grower had the pleasure of paying 11 cents a box for shipping his fruit to the East. Another man whom I know of, shipped 16,000 boxes, and the average returns to him were 18 cents a box, and he was paying 12 cents a box instead of 11 cents, out of his own pocket, for his privilege of shipping fruit to the Eastern market. I think if the railroad companies can afford to carry fruit from Oregon for $150 a car, this convention ought to be able to devise some way in which it can be carried from California at the same rate.

Mr. Bickford, of Newcastle: I will suggest that this committee of five come together half an hour before this convention meets. I would like to tell them something about the fruit interest in Placer County. I do not deem it advisable to talk to this convention as seriously as I might talk to the committee, and to have it published to the world how poor we are. I would not like to tell of the mortgages that we have on our land and the loads we have to carry. I would like to talk with the committee, however, and tell them some serious facts.

Mr. R. D. Stephens: Mr. Chairman, Ladies and Gentlemen: I doubt very much whether I would have had anything to say during the session of this convention had it not been for the remark of the gentleman from Placer just now. I take issue with him upon that question. I believe that the remedy for all the evils that exist to-day would be to do just that which he seems afraid to do. Let the fruit growers of this State, each and every one of them, make out a detailed statement of the expense of the shipments, and the profits or the losses on the returns, and let us go to work and subscribe money—because it takes money to accomplish our purpose—and publish the facts to the people, and if necessary pay for their insertion as an advertisement in the Eastern journals. Probably we could not get those statements published in the papers of California without paying for their insertion. Let us get the facts published in order that we may protect our own interests. In the past it has been the custom of the landed interests and other interests in this State to publish only the gilt-edged and the beautiful, showing the immense profits that have been made in fruit growing in this State. They never have said a word about losses. People have been induced to come to California and invest their money in lands at high prices, setting out fruit trees and growing orchards, which have resulted in heavy losses to them. Now I differ somewhat with some of the gentlemen who have spoken upon this subject. I realize, as they admit, that we can accomplish little if anything by being denunciatory. But I believe if these facts were gathered and presented to the railroad company, and presented in an argumentative way, showing such results as Mr. Madeley has depicted, showing that enormous shipments of fifteen thousand or sixteen thousand packages of fruit have been made at great loss to the growers, showing that it costs so much to place a box of fruit in New York, and showing the gross returns, showing the cost of transportation and commission, and making it easy to estimate the loss, I believe that if that course were taken it would have a beneficial effect. You can take the catalogues of the different houses in New York and in the East, you can get the sales made through the auction houses, and it is easy to estimate whether the shipper has made or lost. In ninety-nine cases out of a hundred you will find that he has lost. You will find that there has been no profit. Now we might as well look the facts directly in the face, and if there can be no relief given in any way, if the transportation rates are down to the lowest point and they cannot be reduced, we might just as well understand first as last that the orchard must come up; because it is a financial impossibility to grow fruit, and pack it and ship it to the Eastern markets, and sell it at a loss. It is better for us to look these facts squarely in the face, and if we cannot get relief, then we must realize that there are too many fruit trees in the country. Now, in regard to coöperation. There are many things which have been said here that are worthy of consideration. For instance, my friend and fellow-townsman, Mr. Weinstock, to whom the fruit growers of California are probably under more obligations than to any one individual, because it was through him that the auction system was introduced, from which great good resulted to the fruit growers; I find that he is a strenuous advocate of coöperation.

THE CHAIRMAN (interrupting): Mr. Stephens, this session is confined strictly to the question of transportation.

MR. STEPHENS: That is what I am getting at. I wish to show through the arguments that have been adduced that there is no relief through coöperation. Mr. Hersey yesterday, in his arguments favoring coöperation, showing the great benefits to be derived therefrom by the producer, cited the fact that a commission man in the East, in order to break down and demoralize the dried fruit market, sold *short* a car of dried peaches at about one cent per pound less than the price fixed by the Dried Fruit Exchange, and that the party making the sale, in order to meet his obligation, had to ultimately pay the price thus fixed, thereby losing over $700. This transaction was given as proof of the great benefits to be derived through coöperation. No doubt much good can be accomplished through coöperation for the dried fruit interest; but the same rule will not apply to green fruits, for the reason that they have to be placed upon the market when ready, with no option as to time, and if coöperation is the only source of relief, the man who sold "short" could go into the market and buy at his own price. In my judgment but little relief can come from coöperation in handling green fruits. So far as information is concerned regarding glutted markets, I think I can safely state that so far as distribution was concerned last season there were many days and weeks that there was no market in the East that paid a profit on green fruits. And if that were the case, where would you have diverted the fruit? Where could you have sent it?

A VOICE: Develop new markets.

MR. STEPHENS: Develop new markets? You would have had to go to some other place than the United States, because in the East almost every market was developed. Philadelphia, New York, Chicago, Kansas City, Minneapolis, St. Paul, Buffalo, Boston, Pittsburg, Cleveland, Omaha, all those markets gave losing prices. And of what value would be your information as to the number of cars that were going to Chicago, or New York, or any other place? So far as the question of one auction house is concerned, I believe that is good. But so far as one agent is concerned, I do not believe that would do. It is well to have only one auctioneer. I believe that every man who owns an orchard and ships a box of fruit should have the right to name his consignee. Because if the entire fruit is centered in one house, there is no incentive for getting the highest possible price. You cannot get relief in coöperation for the purpose of distribution. And you cannot get relief in any way except in lower rates of transportation. Now, so far as the post office question is concerned, and this Government taking hold of this matter of transportation, and the fruit being shipped by the Government, I presume every gentleman here, and every person who is interested in fruit growing, would be glad to have his fruit shipped by the Government. But it will take a long time to bring that about. There can be no relief from that source until after we are gone and our orchards are gone. And from any standpoint that you please to discuss this proposition of transportation and marketing, there can be no relief except by reduced rates of transportation.

Now I believe that if at the proper time your committee in the proper manner should present these facts to the railroad company, having gathered statistics that individuals would give them, showing how many boxes of fruit were shipped and what kind of fruit it was, and the result of those shipments, and not that John Smith has lost so much and Henry Brown has lost so much, that it would enable the railroad company to arrive at a clear idea of the situation. We could say to the railroad company, "Here are facts." The committee could go to the railroad company at the proper time and place these facts before them, and put forth their most earnest efforts to secure a reduction of rates, and I believe that in that way more can be accomplished than in any other manner, unless we tax ourselves to get up a statistical statement of facts and publish it to the world.

Mr. Motheral: Mr. Chairman and Gentlemen: If I did not say something now I would feel when I went home that I had not done what my conscience dictated. The gentleman from Placer seemed to be afraid to tell the truth. I wish to say that there is but one way by which we can ever build up California as a State. There is but one way by which we can ever build up a community or build up a man, and that is by a square and truthful statement of facts. And I would feel that I was dishonest if I induced a "tenderfoot" to come to California and buy my land, and lift me out of financial difficulty at his expense. I have friends to-day that I could inveigle into buying by telling them golden stories of profits, and I could have copied those stories from real estate journals and lied by proxy, and eased my conscience a little. There is but one way by which we can put this business upon an honest basis. There is but one way by which we can ever make the railroads feel our necessities, and that is by telling the truth. And we can tell them squarely and fairly that this business is bankrupting the country, and that unless they give us relief we will soon have no fruit to ship, and that the result will be on their own heads in the end. That sort of argument they can appreciate, and they will. Now, I most earnestly protest against anything untrue being said or done in this assembly that will go out to the world; because we will reap the harvest in the end. The harvest that we are reaping to-day is the result of our folly in former years. We have *not* told the truth. We have made the railroad believe that we were making immense profits, and they, working on the principle of charging all the traffic will bear, have fixed their freight rates accordingly. Now this gentleman who comes here and wants to go before the committee privately and tell them how the fruit growers in Placer are situated, should have the courage to come before the convention and *tell* the truth squarely. The sooner *we* realize that we have got to tell the truth about the situation, the better it will be for us.

Mr. Block: I fully concur with Mr. Motheral. We know that Placer County has passed resolutions that they will stop shipping altogether unless they can get half rates. That tells us more than any gentleman can tell us. I believe they are sincere. Now, gentlemen, in connection with this transportation question, I believe there is another question that we ought to consider. I believe there are others to blame besides the railroad company. Let us take the bitter pill and swallow it. It may do us good. We ourselves are much to blame. After the strike we shipped from Sacramento a hundred carloads and over a day. Where was our sense? That fruit was not sufficiently distributed. Our agents have robbed us. We always want to find fault with other men. It is our folly, our craziness, that we shipped three or four times as much as we ought to have shipped, and our mismanagement that the distribution was not properly effected. If instead of a hundred cars a day we had shipped but thirty, at that rate the fruit growers of this State would have received a profit. They would have received returns at the rate of $400 a car, and that would have been $1,000,000 to the fruit growers of California. But what have we done? We have shipped three times the amount; the railroad companies have swallowed up the bulk of the receipts, and we have got nothing. Now, here is another thing. I will give you some bitter pills to swallow, and I hope they will do you good. I have seen fruit picked, packed, and shipped to the East, in light weight, too—we are very smart—that I would have been ashamed to have fed to a Berkshire pig. [Laughter.] Many of you have done so. You have sent fruit that it would have been well to have kept at home. What was the result? You may answer me that it is none of my business. I will show you where it is. That fruit so sent to Chicago did not bring half the freight charges. Now, I had some fruit go to Minneapolis, Omaha, St. Louis, etc., and when that fruit was sold at from 40 to 70 cents a box I got a letter from Minneapolis, for instance, stating that they had made a very good sale—they had sold mine for $1. They saw the other selling in Chicago for 70 cents. For hardly was that fruit sold in Chicago before the sales were reported in other places, and they thought they were doing well to sell mine for $1. We have swindled each other. The commission men were honest. They thought they were selling for the market price. They did not know they were selling worms with the fruit. That fruit was not fit to be shipped. I think we can have influence with the railroad company by saying, "Gentlemen, if we can get a certain rate we will ship so much; if not, none." But don't send twenty-five cars to a market that is already overstocked. Every place in the United States and Canada has been fed at your expense. Now, gentlemen, this business of shipping fruit in that way should be stopped. Let us see how little business we can do, and not how much. I don't know anything about this assertion about fruit going over the Northern Pacific to St. Paul and Minneapolis at so much less than over California roads, but I know I have felt it. I know that I have received letters stating that there was so much Oregon fruit there that the market was demoralized, and I know that I didn't get anything for mine, and I have not been shipping trash, either. We are all interested in that. Now I hope that this committee will look at this question of shipping to overstocked markets. It is more necessary for us to stop glutting the Eastern markets than it is to get a reduction in rates. If we had shipped but one third of the fruit that we shipped this last season we would to-day have more dollars to our credit. While we are in the business of finding fault, let us look at our own faults and let us correct them. Do not understand me to say that I do not think the rates too high. I think we ought to have lower rates.

Now I will criticise the proposition of our friend from Placer. The fruit growers of Placer say that unless they can get a reduction of one half in the rate of transportation they will not ship. I cannot fully agree with them. I am willing to do justice to the railroad as well as to the fruit growers. Possibly a reduction of one half will not correct the evil altogether. It is true that we are paying entirely too much. But time is the essence of this contract. Were this July or August I would willingly pay the rates that we are paying now, provided they would give us five days from Sacramento to Chicago, than have them carry my fruit for nothing and take ten to fifteen days' time to deliver it in, as they have done heretofore. When the committee meets the railroad people I would rather they would make a proposition to have the rate of transportation fixed at a certain figure for a schedule time of five days, and for every day over that time that there should be a reduction of $50 a car. If the rate from Sacramento to Chicago is $250 a car, and the time agreed on is five days, then if they take six days they should collect but $200; if they take seven days, then $150; if eight days, $100. Then they will have an incentive to bring the fruit in on time. Our losses have come more from their manner of doing business, where they have promised five days and taken nine and ten, than from the high rates they have charged. I think the question of time is more important than the question of rate. I think there should be an understanding with the railroad company that whatever understanding they make they will live up to. If they agree to give a five-day time on a ten-car train, and they have to lose $50 on every car for every day over time, that will make $500 a day on that train, and that amount will make them very careful that cars are not side-tracked while on the road.

[R. D. STEPHENS in the chair.]

MR. H. E. PARKER, of Placer: I wish to correct the impression that we are all bankrupt. We are not; neither are we all mortgaged. We have made money in the past in the fruit industry, and we have made plenty of it, too. But, unfortunately, during the last year or two we have not been so successful, and particularly this year, owing to outside circumstances, and one thing particularly has been the high rates of transportation. There have been other causes. I want to say that we in our county represent one fourth of all the green fruit (deciduous) shipments of this State. Placer County ships about 1,500 carloads of green deciduous fruits, while the State ships about 6,000. Therefore, I feel that if there is any complaint to be made in regard to excessive charges we have a right to bring them. We feel that it is right that those who are suffering under these excessive rates shall demand—I say *demand*—that they be reduced. We have begged long enough. We have begged the railroad company in the years that are past. We have gone before them with abject mien and asked: "Won't you please do this for us?" But, gentlemen, the day has come when we can do this no longer. We cannot do it consistently with our own interest, with our own safety, with that of our industry, the greatest industry of this State. And therefore we must bring before the public, no matter how hard the facts may strike us, no matter how discouraging they may be, we must tell the public and the world, too, and the railroad company in particular, what these things are, and that they cannot exist any longer.

Now, there are several questions which ought to be brought before the convention, which we feel have been neglected. I am told that they can ship a carload of oranges from Los Angeles to Chicago for $60 a car less than we have to pay for our peaches. They can do that, and they are making money. I suppose you all know that the railroad company has made $2,000,000 this summer out of our fruit industry for their services. And what have we made? We find that in Placer we are not the only sufferers in regard to excessive freight rates. There is a gentleman present who says he shipped 6,000 boxes of pears to the Eastern market, and the returns are $1,100 less than the charges on the shipments. I could bring before you numberless instances. A great many have lost their whole crop this year, but the railroad company has charged from 65 to 82½ per cent of the total result. Now, if it is a fact that they cannot carry our fruits to market for any less figure than they have been doing we will have to stand it. But I don't believe it is. I am not despondent. I believe just as much in the future of the California fruit industry as I ever did. I believe these difficulties will be adjusted. And this great corporation will see that it is to the interest of their own pocket to make an adjustment, when they see that the fruit growers mean business. When we come up as one man and say that we must have these things, that it is consistent, that it is right, and we know by figures and facts that it is possible to transport our products cheaper than they have been transported, I feel that we can carry our point.

One thing that illustrates the disposition of the company to overcharge is the fact that they charge as much to send a carload of fruit to Denver as they do to Chicago, although there is a difference of 600 miles in favor of Denver. Now, if they can carry a carload of fruit to Chicago for a certain price, they certainly can carry it to Denver for less. I believe it is time for the railroad to make concessions. If they will not, it is time for us to look for some other way out of our difficulty. It is time for us to have a competing line. I believe there are men and money enough in California to put this line through. Gentlemen, unless we do get concessions from the railroad this will be the inevitable result. For do you believe that we are going to sit down, with the public spirit that there is in California, and submit to these impositions? We can have our own line across if we will. As has been said, it would be a grand thing if the public should own the transcontinental lines. It has been said here that that relief, if it comes, will come after our day; that we will never get the benefit of it. But I feel that we have the remedy in our hands now—within a few years, within a year or two. And I want to say this, do not think that any one in Placer County is despondent, and is going out of the fruit business by reason of the outlook. We mean business; we are here for that purpose, and we are going to stay. [Applause.]

Mr. Wilcox, of Santa Clara: I believe that the remedy is in our own hands. I came to the metropolis of this coast when it was a little village. It is true that to-day you can send goods from the East to Tacoma and Portland, and sell them cheaper than you can in the San Francisco market; and that is why the transportation company has been organized—to redeem San Francisco and save this beautiful State from destruction. I was told in Tacoma that as a matter of fact they can sell goods cheaper there than they can in San Francisco, on account of freight rates. Ten years ago the railroad folks charged $800 a carload to take out fruit. And shippers at that time made more money than they do under present prices. Why? Because fruit was high. Mr. Porter, who was working on a ranch at $75 a month, went into the business of shipping fruit, and it made him wealthy. He made more than a million dollars in early days. Times have changed since then, but we have not changed with them. Two years ago there had not been a carload of fruit left off at Buffalo, which is 500 miles this side of New York, and all the fruit they had was reshipped from New York back there. That was in line of proper development of a market. We must continue our efforts to properly develop our market. I believe, with the Chairman, that if we go to the railroad companies and ask for lower rates we will get them. Ten years ago I was in this convention and the rates were $800 a carload, and we sent a committee to the railroad company and they asked what we wanted, and we convinced them that we needed lower rates and must have them and they came down. We can now assure them that we have got too much pressure on. They have got to come down and they know it. They know that they are not only ruining the people of this State and the interests of this State, but they are building up the great Sound country up there. They are building up the interests of that country against us, and they will come down. I am in favor of a committee that will see those people and make a proper statement to them, and I know they will come down.

NICARAGUA CANAL.

Mr. Edward Berwick introduced the following resolution relative to the Nicaragua Canal, which was referred to the Committee on Resolutions:

Resolved, That this Convention of California Fruit Growers, assembled at Sacramento, California, November 20, 1894, believes that the construction of the Nicaragua Canal would give an immense impetus to American commerce and prove of lasting benefit, not only to the horticulturists and agriculturists of the Pacific Coast, but to the entire nation. On this account the convention respectfully begs Congress to grant urgency to the consideration of such measures as shall insure immediate action, so that the canal may be completed and opened for traffic with the least possible delay.

C. F. SMURR ON FREIGHT RATES.

Mr. C. F. Smurr, General Freight Agent of the Southern Pacific Company, said:

Mr. President, Ladies and Gentlemen: I am here as a representative of the Southern Pacific Company. This is a fruit growers' convention; it is a fruit carrier. It therefore follows that the Southern Pacific Company is as vitally interested in this question of the profitable marketing of your fruits as you can possibly be. It has no desire to forego the carrying of your goods. It has heretofore regarded the fruit industry of California in the same light as the iron industry of Pennsylvania is regarded by the people of that State. The fruit interest is to this State of quite as much importance as the iron interest to the State of Pennsylvania. It has been asserted on the floor that in former years the fruit grower of California has made money, and has made plenty of it. I believe that may be stated truly of each and every industry of the State of California. The wool industry, the lumber industry, in fact every industry that is located along the lines of the different railroads of this State, which are something more than 4,000 miles in length, about 2,400 miles of which are operated by the Southern Pacific Company, have suffered the same depression. And in my capacity as agent of the road there is no single day passes that I am not interviewed by persons representative of some great interest of our State, urging as a reason for reducing railroad rates the depression of the market, a condition from which all our trouble springs. The markets for everything that we manufacture or produce are suffering from the same depression, limiting demand, but the several industries all come to the railroad for relief. I observe with pleasure that you gentlemen think there are other directions in which you can benefit yourselves. The intelligent marketing and distribution of your fruit is one of the directions which has been suggested, and that strikes me as being a very important feature, more so indeed than is the question of freight rates.

In regard to certain statements that have been made by some gentlemen as to the rate for simple cost of transportation in America and in this State as compared with India, I will say that when we are prepared to work for 20 cents a day, as they work and live in India, and when all the materials cost in like ratio, the wheat grower can then raise wheat cheaply, the fruit grower can raise fruit cheaply, and the railroads can carry freight cheaply. Then every product of the growers of this State can be produced as cheaply as is done in India.

I desire to touch upon the potato story that we have heard for the last ten years. That story as related to-day is not true. But concerning the principle of inquiring as to the valuation of products in one market and in other markets throughout the country, in order to determine whether it is practicable to move produce at a certain rate from one market to another, I will say that that principle is followed in practice every day, otherwise railroad rates could not be made intelligently. It is exemplified in your own fruit industry. You are arguing in favor of that principle as a basis of rate-making. You have competition for instance in the markets of Chicago and in other sections of the country. You know what it costs to produce fruit, and to deliver it to those markets. You take the question of competition into consideration as well as the question of cost of production and you ask us for a reduction of rates. The transportation question is no exception to the rule. We take into consideration the cost of service, and if we can figure that we can make any money over and above the cost of doing the business, we take the business. In the matter of the San Luis Obispo wheat rate; it has been asserted here that the rate has been $100 per car to San Francisco. I take it that the gentleman means the usual standard ten-ton car. That if true would place the rate at $10 per ton. There never has been a rate on wheat of $10 per ton from San Luis Obispo to San Francisco. My recollection is that it is in the neighborhood of $4 50.

I desire to say that the estimate or the statement that the cost is about 35 cents a ton for moving freight from New York here is not correct. I will not present Southern Pacific figures in contradiction of that statement. I will simply refer you to the Interstate Commerce Commission, which is the recognized authority in this country to-day on freight rates and transportation. It is the highest authority, as your Supreme Bench is the highest judicial authority. That Commission states that the average cost, without allowing anything for interest, taxes, and various other expenses which we are continuously under, is nearly one cent per ton per mile. I mention this in order that you may have our view of what we regard as the correct idea.

Mr. A. N. Judd: I understand that you run over your road all the Santa Fe freight at the rate of half a cent per ton, and that you call that the cost.

Mr. Smurr: The fact is that we exchange with the Santa Fe at Mohave. We pro rate with that road. We divide with them the through rate, mile for mile, west of the Missouri River. The statement that we do it for half a cent a ton is not correct. Comparison has been made between the orange orchards of Southern California and the peach orchards of Central California. As a matter of fact the freight rates are precisely the same, $1 25 per hundred. They are $1 25 a hundred from Los Angeles to Chicago and $1 25 per hundred from San José to Chicago. The Southern Pacific Company has not one dollar of interest in any refrigerator company or in any ice company associated in the business. We are only interested in the carrying, and we only collect our transportation rates. Mr. Block wants to learn regarding Oregon rates. I am supposed to be kept informed in regard to those rates, and my information is to the effect that they have been maintaining the same rates on green fruits to the East as the California roads, namely: $1 25 for 100 pounds, or in other words, $250 a car. In the matter of refrigerating there is a difference. I have not the circulars on this subject at hand, but my impression is that the railroad companies will have refrigerator cars to turn over to the shippers. If ice is furnished by the railroad company it is, if I remember right, at a nominal price, and shippers take the chances of the refrigeration being attended to in transit. Here in California the refrigeration people own their own cars and look after the fruit; they regard it as absolutely necessary, and my judgment is that it is necessary. But there is another feature that should be taken into consideration in comparing these rates. Thus far the Southern Pacific has managed to keep out of the hands of receivers, and we hope in the future to continue to do so, and we believe you hope to have us do so, because it would destroy every industry of magnitude should the Southern Pacific Company be compelled to go into the hands of a receiver. We aim to make such rates as will enable us to move the maximum amount of produce at minimum rates. When the market conditions will not enable us to get the higher rate we take as low a rate as necessary to move the business and as consistent with the circumstances. If we can only get a trifle above cost we are willing to move the freight. If we make lower rates it is not with any desire to emulate the example of the Northern Pacific, because we do not want to get where they are. We want to keep out of the hands of receivers.

Touching the making of rates to the East on the postage-stamp proposition, as we term it. Some reference has been made to the rate to Denver being the same as to Chicago. That is a matter of competition. We make the rate to Chicago to meet specific competition; the rate from Jacksonville, Florida, to Chicago is 85 cents per 100 pounds. The rate is $1 25 from California to Chicago. As a matter of fact this is a much lower rate per mile to Chicago from California than from Florida, although it costs us from 30 to 40 per cent more to do business. It is true that we make the same rates from California to Denver that we do to Chicago. We do not work on the postage-stamp plan as a principle, but consider that the question of competition to be met is a factor in regulating or determining rates. As I have said, this Interstate Commerce Commission, which is a recognized authority, says that it costs practically one cent per ton per mile to carry freight. But we are carrying the produce of California to-day, taking it all in all, from the lowest rate to the highest, at less than the average cost, and the Southern Pacific Company is doing this carrying and has managed up to this time to keep alive.

A Voice: How do you stand it?

Mr. Smurr: Well, we are enabled still to exist. We have other business besides this through freight business. We have other transcontinental business; and other business besides. Now I wish to say a word with regard to the Placer County people. Their resolutions were of course transmitted to the Southern Pacific Company. Of course we recognized the interest that our people had in that matter, and that it was bound up with their interest. Our agent in Placer County took up the subject, and we wrote him a letter on the general topic of freight rates, not intending it for publication, but simply to fortify him with some arguments so that he might discuss the situation with his neighbors from the carrier's standpoint; and with your permission I will run this over hastily:

San Francisco, September 6, 1894.

Seeing that the value of the fruit crop of this State depends in so large measure on the capacity and inclination of overland carriers to transport to markets beyond the borders of this State, in the most satisfactory time and at the most favorable rates the conditions to be met justify, it is no wonder fruit growers attach the importance they do to the position of the carriers, and I can assure them this company is fully alive to the urgencies of the business, and the fact that this tonnage development is of very great importance to the carriers interested in California's welfare. If the fruit growers cannot handle their fruit at a profit, fruit growing is likely to receive a serious setback; if, therefore, the carriers are negligent as to results to the fruit growers, the policy in doing so is simply a suicidal one, and must react on the transportation interests. The narrow view with which the public journals sometimes credit the railroads, viz., that of simply trying to squeeze the present dollar out of the business without regard for the future, is therefore simply absurd, for the carrier's interest in the prosperity of fruit growing and fruit culture is in the aggregate much greater than the interest of any individual fruit grower. I state the matter thus for the purpose of asking you to bear in mind that any theory is false which assumes, or pretends to assume, that the carriers are indifferent to the fruit grower's welfare, and regard it as little or none of their business, for the interests are more mutual than the casual observer perceives. This company has so large a mileage in the State of California that whatever hurts the development of any industry of the State, hurts the railroad. If the charges for transportation of green fruit are higher than warranted by the price the fruit will fetch in the markets to which transported, that is an element which works against this company's interest. This company is not unmindful of the possibility of this danger. How to remedy the situation is the grave problem. Those not engaged in the business of fruit culture underestimate the anxieties, expense, and risk incident to fruit growing, which is evident almost any time, by the readiness with which you can find people not in the fruit business taking a piece of paper and figuring out to their own satisfaction the handsome returns that can be secured from investments in fruit lands. In precisely the same way those not engaged in the business of transportation can promptly figure out vast returns from present rates charged for transportation of fruit, drawing from the figures so made the conclusion that these rates could be greatly reduced, and still leave a reasonable profit to the carrier. Just as glowing profits of fruit culture are thus figured out readily in theory. So it is in figuring the carrier's profit. If this company could reduce the cost of transportation of green fruit to the Eastern markets just one half what it is to-day, there is nothing that would be more entirely satisfactory to the company, but unfortunately the conditions under which the carriers operate in their business are of controlling force, just as are the conditions in other business, when it proves unwise to handle business below cost of production and shipment. To explain: To and including August 31st last, 4,282 carloads of green fruit had been shipped this season, practically all being refrigerator cars—that is, 3,695 of them. The average refrigerator weighs about 22 tons without its load; into this refrigerator are loaded 12 tons of fruit and say 4 tons of ice. Refrigerators during the green fruit season cannot be held at Eastern points for loading, because if they were so held the refrigerator companies would run out of equipment at this end, and shippers would have no cars in which to forward their fruit. This may be summed up as follows:

Refrigerator car, non-paying dead weight, east bound	22 tons.
Load of green fruit in car, east bound	12 tons.
Ice in car to refrigerate the fruit, east bound	4 tons.
Total dead weight, east bound	38 tons.
Refrigerator returning empty to California, west bound	22 tons.
Total dead weight	60 tons.

Of this there is but 12 tons of freight to pay the charges of transportation. It takes money to do business, and it is not surprising that it proves difficult for shippers to derive profit for themselves from 12 tons of fruit and pay, besides the cost of hauling 60 tons of dead weight a distance of from 2,400 to 3,400 miles. The marvel is that transportation arrangements have succeeded in carrying fruit these distances at any rate that will make the business possible. It never has been done before in the history of the world, and is now being done at such unremunerative figures for the carrier as to make green fruit probably the least desirable for transportation of any product of the soil, if the profits from transportation of green fruit itself were alone to be taken into consideration. The load of fruit in a refrigerator car being 2,400 pounds, and the freight rate, for example, Placerville to Chicago, $1 37 per 100 pounds, the amount received by this company for its service west of Ogden out of the rate named is $141 41, or on the actual dead weight hauled, namely: 60 tons, is $2 35 per ton, which for a distance of 893 miles equals $\frac{1}{4}$ of a cent for each ton of dead weight hauled each mile over this distance. I have figured out the proposition in this manner in the hope of making clear the great disadvantages under which the carrier labors in this business by reason of the unusual expense incident to performing it. The weight of the car ordinarily used for the transportation of such freight without refrigeration may, however, be fairly deducted from this calculation when figuring closely as to carrier's earnings; result will be as follows:

Weight of refrigerator car averages	22 tons.
Deduct average weight of ordinary fruit car	12 tons.
Excessive weight of refrigerator, east bound	10 tons.
Weight of fruit, east bound	12 tons.
Weight of ice refrigerating the fruit, east bound	4 tons.
Excessive weight of refrigerator returning, west bound	10 tons.
Total dead weight hauled, considering only the excessive weight of refrigerator over ordinary fruit car	36 tons.

Dividing which by the revenue west of Ogden, namely, $141 41, gives this company earnings of but $3 93 per ton, or $4\frac{4}{10}$ mills per ton per mile for the 893 miles hauled. The published records of the United States Government, namely, page 699, No. 1,666 of the statistics of railways in the United States for the year 1890, as compiled by the Interstate Commerce Commission, a body whose record is generally conceded by those most hostile to railroads to show no partiality towards the carriers, cites that on the Southern Pacific Company's Pacific system, of which the Central Pacific is a part, the cost of carrying one ton of freight one mile averages $1\frac{24}{1000}$ cents, this figure covering merely the actual operating expenses and omitting the items of fixed charges, interest on bonds, taxes, and similar charges. This is as close as the Government statistician can get it, and as close as any man or body of men can figure it. Hence you can perceive the carriers in their efforts at developing this green fruit business have not been behindhand in fulfilling their part. If the railroads were to do their other business on the basis of the green fruit rates, it would hasten them into bankruptcy.

You may remember that in 1870 the freight rate on green fruit by passenger train to Chicago from Sacramento was $4 50 per 100 pounds. In 1894 it is but $2 25 per 100 pounds. In 1870 the freight rate on green fruit by freight train to Chicago was $2 50 per 100 pounds. In 1894 it is but $1 25 per 100 pounds. In the foregoing I have not dwelt upon the charge of refrigerator companies, which is in addition to the freight rates, but their charge is for a separate service, which requires expert knowledge, namely, the refrigeration and care of the fruit after loading, during transit, and before delivery. Theirs is a service which is expensive, and as long as green fruit has to be transported long distances under ice, so long will a charge for refrigeration in some shape be unavoidable. The solution of the whole matter seems to rest, not with the carriers, who would have solved it before this if their will would accomplish it, but is to be found in some improved method of preserving fruit in transit. I mention the fact at this time, because in the business of transportation we necessarily come in contact with problems of this kind, which appear trivial or easy of solution to those in other callings. But the sooner it is realized that here is where the difficulty lies, the better will it be for all concerned and the greater the number of active minds that are brought to bear on the solution of the difficulty, by the discovery of improved methods, the sooner is the problem likely to be solved. I note the observation that there is something wrong when fruit can be transported to Europe in quick time and low rates compared with service and rates not apparently so satisfactory to domestic points in the United States. Here again the carriers are entering into the spirit of seeking to aid the grower in finding distant markets for California fruit product, and are doing it as much in the interest of the grower as themselves. It would appear strange that a fruit grower should suggest that the carriers be restrained from trying to aid in reaching distant markets in this way, for experimental purposes and to find an outlet for fruit that is now going to an overstocked and glutted market. I cannot seriously think that any one should meditate anything of the kind. The carriers in the project as it stands now are lending their active aid toward demonstrating what can be done in the English markets, and if the project proves feasible we sincerely trust that the fruit growers will be active sharers in the resultant benefits. Indeed, if it succeeds only in diverting to the English market that much fruit which otherwise would be added to the glut in Eastern cities, something will have been accomplished.

Yours truly,

C. F. SMURR,
General Freight Agent, Southern Pacific Company

Reference has been made here to the company charging all the traffic would bear. That is a saying that is unpopular and is referred to in terms not favorable to us. The same idea might be expressed in another way and in not nearly so objectionable a form, by saying that we aim to make such rates as are necessary to develop the traffic.

In regard to the refrigeration of fruits, we want a lighter car and you want a cheaper car. We have made experiments to that end.

Mr. Motheral: Did you succeed ?

Mr. Smurr: We regard the two experiments as successful. The experiment with carbonic acid gas was made late in the season, and the experiment with compressed air was also made late in the season.

A Member: Will this new process be in the possession of the Southern Pacific Railroad Company or in the hands of the patentees?

Mr. Smurr: It is entirely too early for me to answer that question, but perhaps I might venture the statement that the likelihood is that the Southern Pacific, if they do not own the cars, will be in a position to control them in the best interest of all concerned, as these improvements promise to work great good to the fruit grower; but the company wants to test it more fully in very hot weather, and will do so during the coming summer. If successful I think I can guarantee that the growers will receive the benefit of the large reduction in expense. It is the policy of the company to own and control its own cars in that case, but this will probably not be done during the coming summer. I would suggest that the committee confer with the refrigerator car companies in regard to lower rates. The Southern Pacific Company exercises no control over the refrigerator car companies.

Mr. Block: Is it not a fact that transportation companies have virtually forced us, compelled us, to make use of the refrigerator car by reason of the slow time they give ? If we could depend on our fruit going through from Sacramento to Chicago within five days, we naturally would use the other method, would we not ?

Mr. Smurr: I think so.

Mr. Block: And finding that nine days is about as quick time as we can expect, we are compelled to take the refrigerator cars; so that the railroad company must not put all the blame on us for the use of the refrigerator car. Let the blame rest where it belongs. Let it rest on the unreliability of the promise that you made to us. I do not desire to be personal.

Mr. Smurr: No, sir; I do not take it so. Last year your meeting appointed a committee consisting of Mr. Buck, Mr. Anderson, and Mr. Hatch to wait on the railroad company or companies in the matter of time. Those gentlemen duly called to see me, and I think they interviewed all the representatives on this coast of our immediate connections at Ogden. I proceeded to talk the matter up with our immediate connections at Ogden, who represent the roads which the Southern Pacific have no control over. There is no line operated under its management from Ogden to the Mississippi, the Missouri, or to the Atlantic States. The only through line it operates is by way of New Orleans. We recognized the importance of time. We deprecated the necessity of using these heavy refrigerator cars. They are costly. We believed that we could make a schedule that would enable you to use the lighter cars, and we are now encouraged to believe that we can do so. Here is a copy of a letter sent on April 7, 1894, to S. H. Babcock, the General Freight

Agent of the Rio Grande and Western Railway, and the same was written to Mr. Munroe of the Union Pacific line. I said to those gentlemen:

San Francisco, April 7, 1894.

Mr. S. H. Babcock, *G. F. A., R. G. W. Ry., Salt Lake City, U. T.:*

Dear Sir: Referring to previous correspondence on subject of time to be made on deciduous fruit ensuing season, and assurances given us by your good self as to movement east of Ogden over your road and its connections, would say our Operating Department advise that they have arranged schedule or developed ability to make time, contingent on the various roads carrying out their assurances, as follows:

In order to encourage the use of the light ventilated car, we contemplate starting a fast fruit train 1st of June, to be run once or oftener per week until the business develops sufficiently to warrant one or more trains daily, schedule as arranged for, to wit: Leave Sacramento 12 o'clock midnight; arrive Ogden 9 p. m. second day thereafter, thus making 45 hours. We understand your company is to do its part toward making the run Ogden to Chicago by your various connections as follows: via Grand Junction and Santa Fe route, 98 hours; via the D. & R. G. and C. R. I. & P., 93 hours; Burlington route via Denver, 98 hours.

With respect to the refrigerator business, we now contemplate or expect that the bulk of these cars will move over the Sierra Nevadas to Truckee in our regular freight trains as fast as they can be loaded and dispatched; there the re-icing or filling ice tanks completely to be done, and to go forward in train lots or as near as may be; running time on such deciduous fruit refrigerator trains to be about as follows: Leave Truckee 3 p. m., arrive Ogden 4 p. m., 49 hours later. There may be some refrigerators, however, that will continue to be iced at Boca that will go forward in regular freight trains. We had hoped that all would re-ice at Truckee and enable us to send trains out and deliver at Ogden in solid train lots. Our aim shall be to accomplish this as near as may be, on the cars re-iced at Truckee.

This information is given that you may, if necessary, urge upon your Operating Department the importance of carrying out schedule as we understand is arranged with our people. Fruit shippers have been very active this season. The various organizations, local and general, have had their committees appointed, and we have been interviewed on the subject of service, subject of rates, etc. We have thus far insisted that the rate or remuneration for the service they ask at our hands is as low as the roads can afford to go, but we have said further that we believe all roads interested in through line appreciated the importance of fast time on this green fruit traffic and regular time, for it is very essential that fruit arrive regularly. For example, on fruit dispatched any given date, shippers wire their consignees at Chicago, and they in turn catalogue or announce for sale, giving description of the fruit, on a given day, car so-and-so, as the case may be. If fruit is delayed twenty-four hours in arrival, catalogue announcement, of course, is of no avail, and works an absolute damage to owners, because it presents glaringly the fact that the fruit is one day older than should have been, and consequently prices are invariably somewhat off of what might have been realized had the car arrived in time for sale as catalogued. These remarks apply with equal force to fruit in refrigerators.

Prospects here at this date are for a heavy crop, and we anticipate (barring the unforeseen) the heaviest movement in this commodity that transcontinental roads have ever enjoyed. Would like much to get through this season without complaint that has gone forth almost invariably heretofore, regarding poor service, etc.

Bespeaking your most strenuous efforts toward building up of this traffic, I am

Yours truly,

C. F. SMURR.

Copy to: Mr. A. T. Wells, A. G. F. A., D. & R. G. R. R.; Mr. W. M. Sage, T. M., C. R. I. & P. Ry.; Mr. C. N. Crosby, G. F. A., B. & M. R. R.; Mr. F. C. Gay, G. F. A., A. T. & S. F. R. R.; Mr. W. H. Snodaker, G. A., R. G. W. Ry.; Mr. J. H. Waters, D. F. A., Col. Mid. Ry., Denver; Mr. W. A. Bissell, G. F. A., A. & P. R. R.

These letters provided for a five-day train of ventilated cars, and also for a train of refrigerator cars arriving in Chicago in eight days, and an agreement on that basis was reached with the other roads.

San Francisco, April 7, 1894.

Mr. J. A. Munroe, *F. T. M., U. P. Ry., Omaha:*

Dear Sir: Referring to previous correspondence on the subject of time to be made on deciduous fruit ensuing season, and assurances given us by your good self as to movement east of Ogden over your road and its connections, would say our Operating Department advise that they have arranged schedule or developed ability to make time, contingent on the various roads carrying out their assurances, as follows:

In order to encourage the use of the light ventilated car, we contemplate starting a fast fruit train first of June, to be run once or oftener per week, until the business develops sufficiently to warrant one or more trains daily, schedule as arranged for, to-wit: Leave Sacramento 12 o'clock midnight; arrive Ogden, 9 p. m. second day thereafter, thus making 45 hours. We understand your company is to do its part toward making the run Ogden to Chicago in 75 hours, landing the fruit in Chicago at midnight or soon thereafter, the fifth day after leaving Sacramento.

With respect to the refrigerator business, we now contemplate or expect that the bulk of these cars will move over the Sierra Nevadas to Truckee in our regular freight trains as fast as they can be loaded and dispatched; there the re-icing or filling ice tanks completely to be done, and to go forward in train lots or as near as may be, running time on such deciduous fruit refrigerator trains to be about as follows: Leave Truckee 3 P. M., arrive Ogden 4 P. M., 49 hours later. There may be some refrigerators, however, that will continue to be iced at Boca, that will go forward in regular freight trains. We had hoped that all would re-ice at Truckee and enable us to send trains out and deliver at Ogden in solid train lots. Our aim shall be to accomplish this as near as may be on the cars re-iced at Truckee.

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Prospects here at this date are for a heavy crop, and we anticipate (barring the unforeseen) the heaviest movement in this commodity that transcontinental roads have ever enjoyed. Would like much to get through this season without complaint that has gone forth almost invariably heretofore, regarding poor service, etc.

Bespeaking your most strenuous efforts toward building up of this traffic, I am,

Yours truly,

C. F. SMURR.

Copy to: Mr. H. R. McCullough, G. F. A., C. & N. W. Ry.; Mr. G. W. Luce, Gen. Agent, U. P. Ry.; Mr. E. H. Prentice, D. F. A., S. P. Co.

SAN FRANCISCO, May 4, 1894.

Mr. J. A. MUNROE, *F. T. M., U. P. Ry., Omaha, Neb.:*

DEAR SIR: Referring again to yours of April 19, 1894:

At interview yesterday, as per the following diary memorandum, you will observe that lines seem to be now laid in good, clear form, and I trust you will supplement the efforts of your Operating Department to get this fruit through on time, particularly the fast train ventilator car business:

"At interview, even date, between Messrs. Dickinson, of the Union Pacific, and Fillmore, of the Southern Pacific, it was reaffirmed that the five- and eight-day schedule on deciduous fruit, ensuing season, as set forth in my letter of April 7th to Mr. J. A. Munroe, would be carried out, to wit:

"Ventilator train, minimum 10 cars, departure from Sacramento 12 midnight, delivery in Ogden 45 hours later, delivery in Chicago 120 hours later. (Sacto.)

"Refrigerator trains, departure from Truckee about 3 P. M., delivery in Ogden 49 hours later, delivery in Chicago 192 hours later. (Sacto.)

"The refrigerators received at Boca to move along in regular trains.

"C. F. S."

We are prepared, gentlemen, if this schedule suits your Committee on Transportation, to undertake to establish a like service this year. We hope there will be nothing to obstruct.

MR. BLOCK: What do you think of the argument in favor of a reduction of rate provided there is a delay? Are you ready to give us a reduction in case the schedule time is not maintained?

MR. SMURR: I would want to think that over. My first impression is that it would be hardly practicable. This last season was the first introduction of the schedule rate on a fruit train being made the same as that on a passenger train. The California business is a very small proportion of all the business of the Eastern roads. They are very glad to take the California business from us, but when they come to the expediting of it they are not so particular. If we can schedule this train and they will stand with us in the movement just as rigidly as they do in the passenger movement, we can make these regular deliveries. I think we can. We want to urge it on them. We will do our part towards it.

Mr. Madeley: As I understand it, for this expediting train service you make an extra charge over non-expedited trains. Heretofore you have not kept your promise, and you claim that there is no redress to the shipper. Don't you think that there is a legal liability of the company to the fruit carriers for your failure to keep your side of the contract?

Mr. Smurr: In the matter of expediting fruit trains, the company makes no charge for expediting it. Where ten-car lots are sent it expedites them; otherwise it sends them as ordinary freight. A car may be made up by ten different shippers, and it will go in 120 hours to Chicago at $1 25 per 100 pounds. We ask a release from the liability on account of the risk. If the company has to carry the risk it would insure, and would be compelled to ask a higher rate to cover the insurance. Besides this the capacity of this company to control the movement ends at Ogden, other roads handling the fruit east of that point.

(Recess until 1:30 o'clock p. m.)

AFTERNOON SESSION.

November 21, 1894.

[R. D. Stephens in the chair.]

S. G. Nye, of Alameda: I was unfortunate in not having been here yesterday, but in a conversation with some gentlemen of this convention my attention was called to a paper read by Mr. Walton, of Sutter County, the President of the California Fruit Exchange, wherein he expresses a desire that this convention should pass upon or give its opinion upon the prospect of the future usefulness of that institution. And by request I introduce this resolution:

Whereas, Mr. B. F. Walton, President of the California Fruit Exchange, in his paper read before this convention, expressed the wish that the convention should express its opinion of the work of the Exchange for the year, and the prospects for its future usefulness; therefore, be it

Resolved, That a special committee of five be appointed, to take the subject into consideration, inquire into such details of the Exchange work as it may deem best, and report thereon to this convention.

The resolution was adopted unanimously, and the following committee was appointed: Judge S. G. Nye, of Oakland; H. M. LaRue, of Sacramento; F. M. Righter, of Campbell; John S. Dore, of Fresno, and H. P. Stabler, of Yuba City.

ADDRESS ON TRANSPORTATION.

By W. G. Curtis, Assistant to General Manager of the Southern Pacific Company.

Mr. President, Ladies and Gentlemen: I am very much obliged to you for this opportunity to listen to your counsels and to participate in your discussions. The question which engages your attention is one in which the corporation that I represent is as deeply concerned as any other single interest can possibly be. The interest of the Southern Pacific Company in the fruit industry of this State is greater than that of any individual grower. Your interests in the aggregate of course are paramount. I have heard very much that is new to me about orchards, very much that is new to me about fruit raising, and especially fruit marketing; and with your kind indulgence I will say a few words, making them as brief as possible, from the view point of the railroads. There is a common misconception concerning the cost of operating railroads, which it has seemed to me is due to the fact that so much of the expenses are not made apparent to the public in their dealings with the rail carriers. Of the total expenses of operating and maintaining a railroad, about 9 per cent is the general expenses; for example, the expenses of administration, printing, taxes, and commercial agencies; 22 per cent goes for maintenance of way and structures, as the track, bridges, buildings, etc.; 15 per cent for maintenance of locomotives, cars, and other equipment; 24 per cent goes for wages of engineers, firemen, station expenses, laborers, clerks, telegraphers; 30 per cent is cost of fuel for locomotives, steamers, shops, heating and lighting buildings, cars, etc., damage to property, and other expenses for conducting transportation.

The tendency of many people, as I have stated, is to over-estimate the income and under-value the expenses of a railroad, and it most probably arises from the fact that the patrons of the railroad company are only concerned with the movement of rolling stock and transportation rates. In other words, it is probable that most of the railway patrons have some comprehension of the 24 or 25 per cent of the total operating expenses required for engineers, conductors, station men, etc., but understand little or nothing about the 75 or 76 per cent of the expenditures which do not enforce themselves upon the public attention in any way; the maintenance branches of railroad service being seemingly conducted with so little visible effort as to apparently require no very great expenditure of money.

Californians are nothing if not aggressive in the conduct of their enterprises. The pioneer overland railroad was started by California enterprise. The first section was built by Californians, and they had several miles completed and in operation in this State before any rails were laid westward from the Missouri River. Seeing the opportunities developed by the completion of this transcontinental road, Californians were not slow to put to the test the capacity of the State for producing most, if not all, of the fruits of tree and vine theretofore supplied to our Eastern States by local productions or foreign importations. Not only did you gentlemen and your friends and associates in the fruit-growing industries enter into competition with the long-established trade of foreign countries, but you have set for the railroad the task of carrying your green deciduous fruits away over from the western to the eastern edge of the American continent; and you have met here in this convention to advance and defend your right to profitably sell this fruit in markets 2,400 to 3,000 miles away, in competition with similar fruit grown almost within eyesight distance of those markets.

The railroads, which must carry your goods, are naturally prime factors in many of the problems confronting you, and when the conditions of production and consumption, of supply and demand, have temporarily cut off your profits, it is one of your most natural and proper rights to inquire as to the profits of the railroads; to represent to them that your industries and their fruit traffic must stand or fall together; that if California orchardists and vineyardists cannot find a living market, they must necessarily cease to raise fruit, and if trees and vines are rooted up the railroads will suffer the total loss of fruit tonnage; and therefore you are well entitled to demand of the carriers that if their rates are not already at bedrock, their interests, in common with yours (and no one interest can be more benefited by conditions of general prosperity than the railroad interest) require that they cut them down to the same hard level that your business has reached. The change in rates in United States customs duties on commodities marketed in the Eastern States, which come into competition with California productions, has injuriously affected a great many fruit growers, but there is no use to complain; it is done and is behind us.

It is plain to be seen that at the present time fruit growing in California is not profitable. What can the railroads do to meet the situation? The Southern Pacific roads afford transportation along the border land between this country and Mexico. The more perishable fruit, however, the Southern Pacific carries only from one quarter to one third of the way over to the Eastern market, and it has no control over the roads east of Ogden; then we find that the railroad people are something as some of you gentlemen say fruit growers are: when times are good they get along peaceably, and do not get in each other's way, but when times are bad all the available wisdom of their fellow-sufferers seems hardly more than adequate to prevent some of them, quite without any intent to do it, from destroying not only their own business but that of their friends as well. While the freight traffic of California is not so important to our Eastern connecting roads as it is to us; while they are not in close contact with the growers and do not understand the necessities of the fruit shippers so clearly and forcibly as we of the Southern Pacific do, still we have found no great difficulty in arranging with them to do whatever the California producers demand shall be done.

The question of time (five days in ventilated fruit cars to Chicago), as Mr. Smurr has told you, was arranged last year, but the labor troubles and their unfortunate consequences seem to have completely upset everybody, and the arrangement was not carried out.

As to the adequacy of present rates to support the railroads, our connecting lines to the East and competing lines to the North and South are going through bankruptcy and are passing into the hands of receivers. The causes of their distress are many; just how much their participation in the low rates on California commodities has contributed to their troubles, I am unable to say, but speaking for the Southern Pacific, it seems to me that the company cannot do business at rates low enough to make a difference to you of more than a drop in the bucket and continue to sustain itself. Your plans to control and extend the markets seem to me to afford the only adequate and permanent means of relief. In arranging these rates on California commodities with our Eastern connections we have been forced in our various negotiations to divide the total earnings with them on practically a mileage basis. We have been obliged to do this though our operating expenses and difficulties are far greater than are those of any of the Eastern railroads. Wages, as you all know, are higher here. Supplies of all kinds cost more. Fuel is greatly more expensive. The average cost of fuel to run a locomotive any given distance on the Southern Pacific lines is over three times as great as the average on Mississippi Valley roads; and many of the latter roads show a total cost per mile for fuel, engineers, firemen, oil, general supplies, of less than the Southern Pacific's cost for fuel alone. Many physical obstacles exist on the Southern Pacific which are unknown to the most of our Eastern roads. One great expense connected with maintenance of snowsheds, for example, is something they know little about. The cost of building and maintaining the snowsheds and providing snow service for the railroads of this State would be sufficient to construct and maintain at least a hundred miles of railroad in the Mississippi Valley. If the roads in the Mississippi Valley were obliged to pay California prices for fuel and California rates for labor, few if any of them could, even with their current rates and traffic, pay their bare expenses of operation, while their prices for fuel and their rates of labor applied to the Southern Pacific line west of El Paso and Ogden would effect a reduction of over $5,000,000 per year in the operation of the Pacific system of the Southern Pacific Company. Every railroad running out of California traverses high mountain ranges, with roadbeds costly to construct and maintain, with steep grades, expensive to operate. For example, freight Eastbound from Sacramento is lifted 7,000 feet vertically in the first 105 miles of its movement. The expenditure of power requisite to make this lift would move the same weight 450 miles along a level road. As Mr. Smurr has told you, the Interstate Commerce Commission, who are very conservative, very impartial, very thorough in their collection of statistics, and very rigid in their requirements upon the railroads to furnish them information, compute the cost to the Southern Pacific Company for moving freight at from nine tenths of one cent to one and two hundredths cents per ton per mile. Now the average rate upon California orchard products does not exceed nine tenths of a cent per ton per mile, without taking into account the great dead weight of the refrigerator cars. I will not go into the refrigerator car question, as it has been fully presented to you already.

A Member: I notice that refrigerator cars, although they are so heavy and cost so much more to move than the other cars, have been sent East loaded with dried fruit. Why is that?

Mr. Curtis: It is because those cars are sent out here from the East empty for green fruit. They have not been used in that business, and they are being ordered East empty in order that they may engage in the Florida orange traffic, and we are putting this dried fruit in them instead of again hauling them empty over the long overland line.

A Member: I notice that refrigerator cars are frequently used in local traffic in the San Joaquin Valley.

Mr. Curtis: There must have been some good reason for it, such as loading to go in the direction such cars would move empty. We do not voluntarily take the car that weighs twenty-two tons and haul any given commodity in it when we can take one that weighs ten or twelve tons.

Mr. Berwick: You speak of the drop in the bucket which your company can do for the fruit growers' assistance. We would like to know what is the size of that drop in the bucket which you can afford us.

Mr. Curtis: That is a matter which your committee will represent to our people, and which, as Mr. Smurr has said, they will consider fairly and impartially. The railroad people will be glad to "reason together" with you and get at what we can do. Faster time in ventilated cars at existing rates seems most to be what is required. Undoubtedly the fact is that the fruit growers are suffering. It is also true that the railroad is in the same condition. We have gone down and down and down in our rates, and our gross earnings have been going steadily away from us and have left us on this year's business to date over a million dollars short of the necessary earnings to pay our necessary expenses.

Mr. Weinstock: I understand that the cost of traffic per ton per mile as presented by the Interstate Commerce Commission is nine tenths of one cent. That would be, calculating ten tons to the car, at the rate of $180 per carload, would it not?

Mr. Curtis: The lowest they figure is at nine tenths of a cent. Well, as I was saying, the average rate on the California orchard and vineyard products runs along at about actual cost for operating expenses. The operating expenses cover the cost of maintaining the road, of operating the trains, of conducting the transportation, and do not cover in anything for the payment of taxes, interest upon the bonded debt, and other necessary and legitimate expenses. We are accustomed to hearing the railroads denounced for not paying their taxes. In connection with this ever-heard question, I have taken occasion to look up and see how much in taxes we have paid into the treasury of the State of California since 1880, when the fruit industry became a factor in transportation, and I found that the lines operated by the Southern Pacific Company had paid in that time over $8,000,000. I found further, that during that period our railroad earnings from the transportation of green and dried fruits out of California, hauling them through Nevada, Utah, Arizona, and New Mexico, to the point of delivery to our connections, was in round numbers something less than $7,400,000. We have paid more in taxes than you gentlemen have paid us for hauling your fruit out of California. This may have no particular bearing on this question, but it is a fact of interest. Our rate per ton per mile, I find further, upon these characteristic staple productions of California, are as low as the Pennsylvania Company carries nails from Pittsburg to Philadelphia. It is as low per ton per mile as cotton, the great staple product of the South, is carried from New Orleans and Memphis to Baltimore and New York. The Southern Pacific freight rates are now less than half what they were on its general business twenty years ago, yet the volume of tonnage per mile of road has increased barely 10 per cent in that time. By way of contrast it may be interesting to note that the Pennsylvania Central road, which stands at the head of the great low-rate, large-earning railroad properties of America, carried four times as much tonnage per mile of road as we now carry before its rates were lowered to the present Southern Pacific average, and now when its charges are only about 50 per cent lower than the average charges of the Southern Pacific, its volume of tonnage per mile of road is over 800 per cent greater than ours. We carry 300,000 tons of freight per mile of road per annum, and they carry 2,700,000 tons. This relation of tonnage to rates is a very important one to railroads. Some people say: "Reduce your rates one half and people will give you double the tonnage." If you have double the tonnage you must necessarily have more expenses. You may not have any more taxes to pay, but you will have more expenses, more fuel and supplies to buy, more engineers and firemen to pay, more conductors and brakemen to pay, more station service, more wear and tear upon your road, and more rolling stock to be kept up. At any time when a railroad is in a normal condition of prosperity, the lowering of its rates, if it gets enough increase in tonnage, will not injure it; but if it lowers its rates without getting a proportionate increase in tonnage, it is on the road to poverty. California is in the experimental stage of development. When the supply of any one of its peculiar products approaches the demands of the existing markets, the profits of the industry, pending the building up of new markets, are likely to be uncertain. Railroad companies of this State are necessarily in hearty sympathy with every industry and the interests of the community they serve. But they cannot always stand in the breach between the producer and the consumer in such a way as to always insure profits to the former. When they sacrifice their profits to the necessities of their patrons, get down with them to a cost basis and move freight for the mere cost of carrying, they should not be asked to go lower. To show how far the Southern Pacific Company has gone on the road toward poverty, let us look at their average rates on commercial freight from 1872 up to the present time. I have a little table here. It shows that in 1872 the average rate per ton per mile was 3.66 cents, and in 1894 for the first seven months 1.32 cents. The passenger rate in the same time has gone down from 3.83 cents to 1.8 cents per passenger per mile. Had the rates of 1872 been maintained, we would have earned over $35,000,000 more than we did actually earn in 1893. Even had the rates of 1880 been earned on the traffic carried during 1893 our earnings would have been nearly $19,500,000 more than actually taken in by the company. So far, then, from fixing its rates and standing to them, regardless of the necessity of its patrons, the Southern Pacific Company has in fact, by the adjustment of its operations to the ever changing commercial conditions and interests of the Pacific Coast, lowered its rates until it has, of its earning power, given up to its patrons, even as compared with 1880, a period when the fruit industry was just beginning to become a factor in transportation, nearly $20,000,000 per year.

Our profits have come down just as the profits of all other industries have come down.

Something has been said here by way of comparing the rail rates of our Pacific Coast region with the rates in other countries. I could tell you a good deal about that, because it is a subject in which I have felt a very great interest. The general fact is that railroad rates in America—the rates overland, we are talking about—are the lowest in the world. Australia has been mentioned. I know a great deal about the Government railroads in New South Wales. It was my privilege last year to entertain what you would call the General Superintendent of those roads, and he was a very sharp, well-informed man. He came to me for information, and I think I got very much the best of it. Now those Australian roads are Government roads. They are built and owned and operated by the Government. Their conditions and the conditions of that colony are about the same as those of California. Their passenger rates on an average, as nearly as it can be got at—because they do not keep their statistics as we do—run fully 40 per cent higher than our passenger rates. Their freight rates are exactly double our average. But it does not seem to me that these figures are to the point. You gentlemen do not care what it costs you to raise peaches as distinct from what it costs you to produce apricots or lemons when you have the hard fact staring you in the face that whatever you raise your business is unprofitable. It does not satisfy you to find out that one thing is raised for a little less than another thing. So it is with the railroads and with these comparisons. When we face the hard fact that the profits of the business are gone and that the railroads are barely able to sustain themselves, meet their expenses, pay their taxes, and keep themselves square with the world, that sort of comparison is of very little use to anybody. Gentlemen, I thank you for your kindly attention.

Mr. Buck: Is there any reason why the Southern Pacific cannot give us a scheduled fruit train with ventilator cars to Chicago, on time the same as that made by passenger trains?

Mr. Curtis: I should say there is no reason why that cannot be done. The Southern Pacific controls the matter; as far as it runs its trains it will make its share of that time and will use its influence with its connections in that direction. An arrangement of that kind was made last year, and except for the unfortunate condition of affairs brought about by the strike, undoubtedly it would have been accomplished—a five days' schedule from Sacramento to Chicago. Mr. Buck was not present this morning when Mr. Smurr informed the convention quite fully on that point and read you his correspondence with our Eastern connections, with the General Freight Agents of Eastern roads, and with the Manager of the Union Pacific. The arrangement was made last year, and it would have been followed except for the labor troubles.

Mr. Buck: There is no difficulty about ten-car lots being made up if growers can have the assurance from somewhere that they will be taken. I was one of the committee that visited Mr. Smurr last year. That gentleman gave us the assurance that this would be done.

Mr. Curtis: The agreement as understood by the railroad people of the Union Pacific, as well as by ourselves, was that the usual ten-car train would be furnished. That is a very small train. The railroad people substituted this free expedited service for the paid service formerly made, because it seemed feasible for the fruit shippers to get together at least ten cars for each train run.

Mr. Buck: There would be no trouble in furnishing ten cars, and much more than ten cars, if the fruit men had assurance that they would go. The first week there might be more or less uncertainty, there might not be more than three, or five, or eight cars; but before the train had run one week there would be ten cars, and much more than ten cars, because we would then save the cost of refrigerating, which is a big tax. There is a large part of the products of California that would be shipped in ventilated cars if we could have the assurance that they would be landed in Chicago on the fifth day. We don't want them there on the fourth day. We want them there on the fifth day. We don't want them to take six, seven, eight, or nine days. The fruit is packed to stand the five days' shipment, and it is expected under ordinary circumstances to arrive at the point of destination in fairly good condition at the end of five days. Now, with the assurance on the part of the railroad companies that we can have a five-day time from Sacramento to Chicago, and equivalent points, I believe that the question is to a great extent solved, which we have been talking about in this meeting. It is the prompt service that we require, more than the price, in my judgment. And not only that, we want a positive assurance that we will get the service, as I told Mr. Smurr last summer when he told me that they would run a ten-car train provided we would load the cars. I told him to give us the assurance that the ten-car train would be sent out, and we would very soon have it loaded.

Mr. Curtis: There seems to be no insuperable difficulty connected with this matter. As, however, the question will have to be taken up again with our Eastern connections for the next season's business, my suggestion is that the committee bring these questions up when they come together with our people in San Francisco. It certainly would seem, as you say, that it can be arranged, and that it ought to be arranged; perhaps not an absolutely guaranteed time, but there is no reason, no physical reason, why such special trains may not be run and get to Chicago with as little delay as is met with by passenger trains.

Mr. Motheral: We of Tulare, Kings, and Fresno counties are away from Sacramento. We have to start our trains from those counties to Sacramento. Now we have a great deal of difficulty in getting proper service. I would like to ask if there can be any such arrangement as will enable us to get our fruit to Sacramento in time.

Mr. Curtis: The difficulty is to get ten-car trains. A single car put in among other freight cars sometimes gets delayed. There is no difficulty in the company taking care of a special train. If your business could be developed to ten-car minimum trains, it would certainly seem that it ought to be taken care of, and I am authorized to say that we will take care of it just the same as other similarly expedited business.

Mr. Motheral: Would it not be possible to make Sacramento a central point to which all these trains would go and be sent from there? We had our cars side-tracked, some of them, and they stood there two or three days.

Mr. Curtis: Was not that during the strike troubles? We were in very great distress in our business at that time, and for six weeks it was impossible to get our trains moved properly. It was impossible to give our patrons the service they were entitled to.

Mr. Motheral: I can say that it is not so much what we lose in overcharge, as it is what we lose in delay. There must be something done. We must either make some central point at which all the freight of our section can be received, or we must wait until we can have sufficiently developed our industries to make trains for ourselves.

Mr. Curtis: My suggestion as to that would be that this matter should be put into the hands of your committee.

Mr. Buck: In regard to what Mr. Motheral says, I know what he says to be true, from the fact that I have had considerable to do with the shipping of green fruit from Sacramento. All of us who happen to live outside of Sacramento are somewhat unfortunate. We have to get our cars in the best we can. I would like to say to Mr. Curtis and to Mr. Smurr that I do not believe but what the fruit growers and fruit shippers of this State have as kindly a feeling toward the railroad company as they have for us; and I will say further that I do not believe there is much if anything that the company has lost on green fruit shipments. I believe that whatever reductions have been made in the rates of green fruit transportation have been kept pace with by the increase in green fruit shipments. But I would rather have good service at present rates than lower rates with the present service. And I believe I voice the sentiment of others who have spoken before me when I say that we must have it. I believe that good service will do us as much good as lower prices. In fact I would rather have a good, reliable service than a reduction in the rates with the same service that we have had in the past. [Applause.]

Mr. Motheral: I would like to ask a question. It has been stated in the newspapers that the rate to-day for a carload of tea from here to Chicago is from $80 to $85. Now, is that a fact?

Mr. Curtis: Competition in the transportation of tea from China to New York is largely influenced by the Isthmus of Suez. We have not yet gone so low as $80 a car, but we have undertaken to say that we can haul for $140 a car for the purpose of meeting that competition.

Mr. Weinstock: Does the volume of business influence the freight rates?

Mr. Curtis: Unquestionably.

Mr. Weinstock: If it were possible for the fruit growers to quadruple their shipments after 1894—in other words, having shipped say 7,000 carloads of green fruit in 1894, if it were possible for the fruit growers to ship say 20,000 carloads in 1895, would that increase in the volume of shipments entitle it to any better rates?

[Mr. Buck in the chair.]

Mr. Curtis: It most certainly would.

Mr. Weinstock: Has there been any decrease in the transportation rates on green fruits since 1887?

Mr. Curtis: I am not familiar with that fact, but will ask my friend, Mr. Smurr, to speak upon the point. So far as that is concerned, however, the net decrease in rates which might have taken place consequent upon the increase in tonnage has been prevented by the greater cost of carrying. Back in early times, you all know, California fruit went to market in ventilated cars. The refrigerator cars came in, and the cost of carriage per ton increased greatly in consequence. I remember back in those days we had ordinary ten-wheel locomotives, which formed part of the early equipment of the Central Pacific. We used to go up that road with nine or ten cars. Now we use locomotives of nearly double that power and can only haul between six and seven cars between here and the Summit. I would state that as one reason why, with the recent increase in the volume of fruit traffic, a reduction in freight rates has not been feasible. The conditions have imposed a greater cost upon us.

Mr. Weinstock: The situation as I understand it, and the history of the fruit raisers, are substantially as follows: In 1886 the railroad company voluntarily, in order to meet a crisis at that time similar to the crisis of this year, reduced its rates from California to Chicago from $600 a car to $300 a car, provided fifteen-car trains would be furnished by the grower.

Mr. Buck: Let me correct a misunderstanding. The freight rate was reduced from $600 to $500, with a special train.

Mr. Weinstock: I would cover that by qualifying my statement that fifteen cars had to be shipped in order to obtain this rate. The plan of the fifteen-car train was found to be impracticable. It was not in the interests of the grower and not in the interests of the transportation company. At the close of 1886 the fifteen-car train was abandoned and the ten-car train substituted at an advance rate of $400 a car. The railroad company at that time claimed that $400 per car from California to Chicago was the lowest possible rate at which it could carry fruit, considering the volume of business that the growers at that time had to offer. But the promise was made that in proportion as the value of traffic would increase, so in proportion would the transportation companies make concessions. My purpose in asking Mr. Curtis whether any reduction had been made was simply to make it plain that that part of the promise made by the transportation company has thus far not been fulfilled. The volume of shipments has increased since 1886 fourfold. The rates, unless I am misinformed, have not changed. And I want to make it plain at this time, so as to establish the fact that the fruit industry is entitled to some concessions on the part of the railroad company. [Applause.]

Mr. Smurr: In answer to Mr. Weinstock's assertion that the freight rate has not been reduced, I would say that it has not been reduced regardless of the fact that the volume has increased, is by reason of the fact that prior to last year the expedited train service, or the fruit train service, as called by Mr. Buck, was based on a fruit rate of one dollar and a quarter per hundred pounds to Chicago on trains approximating passenger time, with a guarantee of ten cars, and for the expedited fast time a charge of $100 per car additional was made for a train of ten cars. That is the class of service that your committee asked us to render, and that is a charge that we have made when we were running expedited trains. Now, then, at the instance of Mr. Buck and his committee, consisting of Mr. Anderson and Mr. Hatch, last year, as I told you this morning, we undertook to run a fast train service of ten cars, as we understand it. As Mr. Buck understands it, it was to be regardless of the number of cars. And in order to do that we propose to charge $1 25 per one hundred pounds, or, in other words, waived the $100 per car charge. Now, I say that was a reduction in the rate. And in the matter of time that has been touched on in this convention, here is a copy of a circular that I would like to leave with you. Perhaps your Transportation Committee may want to look it over and suggest some changes. This was issued from the general freight office of this company on June 19, 1894, about eight or nine days before the strike, and was sent to its agents at the different fruit-shipping stations in California. I say to the agents:

San Francisco, June 18, 1894.

To Agents at Fruit-Shipping Stations:

Gentlemen: That you may fully understand the general plan of movement of deciduous fruits east bound current season, and acquaint shippers and others interested therewith, the following is presented for your information:

As soon as at least ten cars (ventilators) offer either twice or three times a week, or daily, we will dispatch from Sacramento a train making the run to Chicago in 120 hours, early morning delivery in Chicago, we, of course, reserving the right to fill said fast ventilator fruit train out with other than refrigerator fruit to full carrying capacity.

With respect to refrigerator service: Of the companies that re-ice at Truckee, their cars will move forward from Sacramento in regular freight trains to Truckee, there to be massed and dispatched in solid train loads, one or more sections, at 3 P. M. daily, reaching Ogden 49 hours later. Those that re-ice at Boca, their cars will move forward in regular freight trains to Boca, there to be set out and re-iced and picked up by succeeding trains. In event of full trains icing at Boca, then of course, they will be run in solid trains thence to Ogden; no set hour for leaving Boca, depending wholly on when their trains are ready, consequently no set hour for reaching Ogden.

The aim of both these classes of service will be to reach Chicago about midnight, in one instance five days, and in the other eight days from Sacramento; this to insure the fruit being in auction houses as catalogued.

This arrangement it is expected will work much better than that of former years, under which refrigerator cars went forward by regular freight trains at all hours of the day, dropping into Ogden by different trains, where they were held and made up into solid trains, as the number of cars warranted, and sent eastward.

Please see that shippers are notified of the days of departure of these special ventilator trains from Sacramento (full information regarding which you will find in Mr. R. H. Pratt's circular inclosed), so that their picking, packing, and loading may be done in time to get the cars to Sacramento to connect therewith, *it being the wish of this company to encourage the use of this ventilator equipment in this traffic at this time, and to make a daily service just as soon as possible.*

Yours truly,

C. F. SMURR,
General Freight Agent.

MR. WEINSTOCK: Allow me to ask, in that connection, what is the rate at this time for ventilated cars, slow freight, from here to Chicago?

MR. SMURR: $1 25 on ten-ton cars.

MR. WEINSTOCK: What was the rate in 1886 on the same kind of service?

MR. SMURR: $1 25.

MR. WEINSTOCK: Therefore, there has been no concession.

MR. SMURR: In the ordinary freight train, no. But your committee, when you came to us, wanted expedited service. They did not discuss ordinary service. They desired to use the ventilated car for that service. They wanted expedited service. We gave them expedited service at $1 25. Therefore, I say there has been a reduction.

MR. WEINSTOCK: The lower rate was not made available, then, on account of the labor troubles?

MR. SMURR: It was not made available because the shippers did not get their fruit together.

MR. WEINSTOCK: Are we to understand that this rate will prevail?

MR. SMURR: Yes; I am authorized by our Operating Department to say to your committee that we will undertake to give you that same schedule rate during the coming season, and I leave this circular with you so that you may look at it. We are fully in sympathy with you in the matter of making improvements.

MR. WEINSTOCK: Let me take occasion to say, then, ladies and gentlemen, that if the Southern Pacific Company *having* made that proposition as I believe in *good faith*, will carry out that programme, that it will be the *most* important achievement that has ever been accomplished in the interests of California fruit culture. [Applause.] It means an increase in our output of perhaps three or four fold. It means *a profit* to the grower, and a porportionately larger profit to the transportation companies. And if we can depend upon this programme being faithfully observed, I think there is *daylight* in sight. My faith in the future of fruit culture and in the value of our fruit lands would materially increase.

MR. CURTIS: I want to say that the Southern Pacific Company will carry that out in so far as its service extends. It had an agreement last year with General Manager Dickinson, of the Union Pacific, that he would do as we did. The strike troubles ensued and the agreement could not be carried out. But I believe we can bring influence enough to bear to carry that programme through to Chicago in 1895.

Mr. Buck: Do you think there is any chance for you to start a train on reasonable time if one car of the ten does not go? Do you think it practicable for you to run one week with less than ten cars in order to get the fruit shipments started?

Mr. Smurr: We are willing to consider that. Of course I will not promise you that we will take five cars to Chicago. We will fill out the train with other cars. Whether we can make schedule time with five cars is a matter that I would want to discuss further with your committee.

Mr. Buck: If this was the commencement of the fruit season I believe that if a train was started to-morrow, before it had run a week, you would have no trouble in getting more than ten cars. If fruit growers can depend upon starting at the proper time there will be no trouble in getting the train made up.

Mr. Block: Mr. Smurr has expressed his opinion to us that proper distribution is a very important matter. I want to impress upon him and Mr. Curtis, and the railroad parties, that proper distribution last year was very much hindered by delay. And I want to point out that the railroad company must assist us in that, or else we cannot do our duty in that respect. If we have a car that is ten days on the way instead of five, or if it arrives in Chicago on Sunday morning instead of Saturday morning, it very seriously interferes with the proper distribution of our products.

Mr. Smurr: I understand that thoroughly.

Mr. Block: I am glad you do.

Mr. Smurr: I have met Mr. Buck not only in committee meetings but in many personal interviews during the season, and I have never met him that he did not give me a speech on that very subject. [Laughter.] In this connection I will say that any information we can furnish your committee in the way of aiding them, is at their service. And any way in which we can aid the fruit grower that will not interfere with individual interests we will be glad to do so.

Mr. Fowler: In the shipment of dried fruit from the section which I represent, are there any reasons why there should be such a large difference in the cost of shipping canned goods and raisins?

Mr. Smurr: The answer to that is this: As I explained this morning, there are many factors that are necessary to make rates. Among the leading factors are two kinds of competition, competition of markets and competition of carriers. We find that we have the competition of the carrier to fix, and the question is whether we will go out of business, or if we can figure that there is a nominal profit above the cost of hauling, if there is one mill per mile above the cost of hauling, that one mill is a contribution to our expenses. When a committee was appointed from your district, they visited us, and we had considerable discussion and consideration of the market competition prevailing in the East, and it was conceded that some modification of the freight rate was necessary. It was claimed very urgently at that time that the same interests existed for a reduction in the raisin rate. But we could not well give one rate on general freight and another rate on raisins. Consequently, we reduced the rates in the one instance in boxes 40 per cent, and in the other about 30 per cent. These reductions were made against a competing market.

Mr. Fowler: What arrangements have been made by which we could get a schedule of time for green fruit from Fresno to Sacramento? This year it has been exceedingly unfortunate.

Mr. Smurr: This year was an exceedingly unfortunate year for us all. In some instances our engines were crippled, and we were unable by reason of the strike to do the work satisfactory to ourselves or to our patrons.

[Mr. Curtis and Mr. Smurr requested to be excused, as they had to take the train for the City.]

Mr. B. N. Rowley: I have a letter here from several shippers of cherries in Alameda County, which is pertinent to the subject under discussion by this convention. They ask that the matter of time for early shipments of green fruits be so regulated that the shipments of cherries can receive expedited service. In other words, they ask that the cherry shippers of Alameda County be allowed to participate in the benefit of expedited service. They claim that the present freight rate is not burdensome, provided the time required in transportation is shorter. And they claim in this letter that unless the time is shortened so that it can be made in 120 hours to Chicago, that they will be unable to ship cherries from Alameda next season. And they are fearful that even if the railway company grants that through service on special time, that it will commence so late in the season, on peaches, and will not commence early enough for cherries, so that they will not have the benefit of the expedited time in cherry shipments. And they want to urge this matter upon the transportation committee. This is a prayer from the cherry shippers of Alameda County.

Gen. Chipman: I do not know that anything can be accomplished by further discussion. Now that Mr. Curtis and Mr. Smurr have gone we have no one upon whom we can impress ourselves except it be this committee. Now, in my view the question of the success of fruit growing in this State rests upon this very problem now under discussion; and not with reference to the shipment of dried fruit especially, or the shipment of green fruit especially. I do not, as a fruit grower, complain of the time or of the rates upon dried fruit. I do not, as a fruit grower, complain of the rates, outside of refrigeration; but I do complain of any system of shipment which excludes me from the privilege of the low rate and drives me into an expense of double what ought to be imposed upon me and which practically destroys all my profits. Now, the evolution in our case seems to be such as to indicate that we have evolved ourselves backwards. In our efforts to get ourselves out of our difficulties we have been getting into greater ones. We have jumped from the frying-pan into the fire. We had a fair rate with a promise of quick time in ventilated cars a year or two ago. But whether by manipulation, designedly effected, I will not say; at any rate, through the circumstances which surrounded that character of shipments by ventilated cars we were driven to refrigerator cars and our expenses were doubled. Now I have been told—I don't know how true it is—that the railroad company has profited by this, not only indirectly, but directly, by enjoying part of the profits of this refrigeration. The whole system is wrong. It should be done away with. Now, I don't believe in approaching the railroad people in any different way from that in which I would approach any other business man. I think we are largely responsible for having gone at this thing in the wrong way. If we approach the railroad company in a spirit of fair dealing and argument, presenting the truth as we know it to exist, I believe they will listen to us. But we must impress upon them the fact that we are now—to use the language of a distinguished American citizen—confronted not by a theory, but by conditions. These conditions are that we cannot ship green fruit by this refrigerator system and leave any profit to the fruit grower. If the green-fruit shipments are driven out, then our dried-fruit shipments will be correspondingly increased. In my judgment the salvation of our industry rests in the profitable shipment of our fresh fruits, and we are absolutely in the power of the transportation company. Mr. Smurr admitted here in your presence that he had given a rate of freight grown in China and Japan of just one half the rate on fruit grown in this State, in that way discriminating against our industry. Is it not logical that if that company could give a rate across this continent to freight from China and Japan at $140 a car, that they could give us rates for less than $250 a car, across the same continent, thereby building up the industry? These are considerations for our committee. We have increased the green fruit shipments since 1890, 137 per cent. We have added to the freights of that company and to the business of that company since 1880, 34,000 cars. William H. Mills, one of the representative men of that company, and a man who generally speaks by the card, said in a public assemblage not more than two years ago, and in my hearing, that the law of freight rates depended largely upon the volume of traffic, and said that the time was fast approaching when that company would make concessions to us, based upon that law of transportation, that as the volume of traffic increased, the rates would decrease. Since that time we have more than doubled our transportation of fruits, but there has been no concessions made. At what point will that company concede that the volume of business will allow them to apply the law of transportation which gives a lower rate where the volume is increased? If it does not begin when there are 20,000 carloads produced, when does it begin? Now, we should urge upon this company in a business way, in a friendly way, not in a hostile way—we should urge upon them the importance of this industry. They are selfish men as we are selfish men. They can afford to take our fruit across the continent and distribute it in the East without any profit, rather than see the industry perish. I am speaking now of the green fruit industry, because the other will live in spite of them. They can afford to so reduce our rates on fresh fruits so that we can ship them at a profit, even if they ship them at a loss. Have they not contributed largely to the condition of the population in this State by the argument that horticulture was to be profitable? Now, in good faith, they should help to make good that promise. They should not induce people to come here and engage in an occupation that they themselves make unprofitable. They have gained an increased passenger traffic by these representations, and the traffic of distribution throughout the State has been largely increased—all the work and the result of getting our State settled with horticulturists. That is the broad view of the question. It is the fair view of the question. We have the right to demand this of them, and they have no right to refuse it. I don't know where we can help ourselves if we cannot get this relief. But the relief will come. They will not ruin "the goose that has laid the golden egg." [Applause.]

PRUNING DECIDUOUS TREES.

Essay by R. C. Kells, of Yuba City.

The subject of pruning has been assigned to me to be presented to this Convention of Fruit Growers of California. When I look over the reports of the past Conventions of California Fruit Growers I must confess I am at a loss to know what I can present at this time that will be of importance to the growers in the line of practical pruning. I think we have and read too much of theoretical pruning, but perhaps there may be some new planters who will expect information on this subject, and for their benefit I will repeat what has been said by a number of the older growers of the State; and to begin with I must say there are about as many rules for pruning as there are planters.

In the Sacramento Valley, where we have the long hot seasons, the one custom has been adopted of low pruning, and this custom I may say applies to all varieties of fruit trees, including citrus varieties, with two objects in view, namely: first, to keep the bodies or trunks of trees from sunburning; second, to lessen the expense of thinning and picking the fruit. The first, however, is of much the greater importance.

When setting out a new orchard my plan of pruning the young tree from the nursery is to cut the top back to fifteen or eighteen inches; at the same time examine all the roots, see that all bruised or mangled roots are cut off, and also cut back the long scraggy roots that they may not be placed in the ground doubled or curled up. This treatment applies to all varieties of deciduous trees. During the first year's growth we watch the new shoots as they come out, and cut off enough of the new growth to only leave from four to six of the stronger shoots to form the top of the tree, this being the first year's growth. The following spring we cut this growth back one half, sometimes thinning these branches down to three or four as the case may require, to make the tree well balanced and of proper shape.

The tree now starting out in its third year's growth is at a time when the grower can assist nature in forming a perfect tree by thinning out the new growth during the summer months—pulling off suckers that may start below the main branches, or limbs that were left to form the tree. This is a time when good judgment must be used in pruning, for the foundation of the tree is laid and we come to the point when we prune for fruit.

So far as my experience extends, the following varieties of trees will stand what we call heavy pruning: the peach, apricot, Bartlett pear, apple, nectarine, and most varieties of plums; the French prune and cherry I would not prune heavily after the third year. My reasons for pruning the first named varieties heavily, is to make a stocky growth that the tree may be able to support a heavy load. Their nature is to produce a long slender growth unless cut back from year to year.

I wish to speak of the peach more especially, for I think there are more mistakes made in the pruning of the peach than of any other one variety. By care and good judgment in pruning the peach, we may prolong its life many years. Prune every year, cutting back and thinning out the center, using great care not to cut out too many of the little fruit spurs growing on the main branches, but cutting out the slender branches of the old wood, leaving as many branches of the new growth as the tree will support. In this case judgment must be used as to what the tree will support; the soil may be wet or dry, rich or poor; the grower must be the judge.

To grow small fruit prune lightly. To grow large fruit prune with care and judgment. To get this required judgment you must have some practical experience. The oldest and most practical grower of this State might write page after page on the subject of pruning, and when the new planter, who wishes to start an orchard from the proceeds of his office (and we have many orchardists of this kind in California), will tell his hired help to prune his trees as Smith or Jones, for that is the rule laid down in "California Fruits" (Wickson). These planters or growers will in a few years want to sell their orchards, for, as I said in the beginning, we have too much theoretical pruning, which causes more expense, and generally brings the grower more in debt from year to year.

When pruning is properly done it will assist in a great measure the work of thinning the fruit. As an example of this work I would refer to the orchards of Vacaville. There the pruning is done with the object of producing large fruit, and also keeping in view the object of not overloading the tree with a lot of worthless small fruit.

Some writers claim the object of pruning is to thin out the tops of the trees to let the sun shine on the fruit, but this I think is of little importance.

Pruning that I might recommend might not do for the coast counties, hence the grower must be his own judge as to how he wants to prune.

You will find articles on the subject of pruning in the reports of 1887, 1889, 1890, 1891, and 1893, also in Wickson's "California Fruits." All these are good articles. The time for pruning is when the trees are in their dormant state; beginning about January 1st is usually a good time.

When I can have my choice in pruning all varieties of deciduous trees, I prefer doing the work when the sap begins moving, in the spring of the year. Pruning at this time, all cuts of the wood heal over better and the pruner can see how the buds are setting and then use his best judgment as to how much wood he wants to cut out.

Pruning is of great importance, and as growers we ought to meet with each other in our orchards, compare methods, and examine results; by this means we can get some of the practical ideas wanted. There is much room for improvement in our methods of pruning, so let us compare ideas and try to excel in pruning as we have in other lines of fruit culture.

DISCUSSION ON PRUNING.

Mr. Sprague: I would like to inquire in regard to the experience of the most experienced growers regarding pruning with reference to balancing the tree up against the wind and keeping it as nearly straight as possible. It has been suggested by certain growers of experience that the alternate cutting of the branches of the apricot, for instance, has secured a more steady production from year to year than the general custom of making just about the same cut all around. For instance, one main branch has half a dozen spurs on it, divided into subdivisions. The suggestion has been made that by cutting one branch ten inches, and then on the other side balancing the branch by cutting it six inches, and reversing that from year to year.

Mr. Frank A. Kimball: We have continuous winds in San Diego from the northwest, and all our trees incline in the opposite direction. The only way we have been able to balance is by cutting from the leeward side quite severely, which tends to drive the sap to the other side and to increase the size of the branches. And now with our experience we are able to balance our new orchards almost as well as though they were in a quiet atmosphere where there were no strong winds. But prior to this time our old orchards, nearly all of them, inclined not less than 3° perpendicularly. We are able now to cure that almost entirely by pruning from the leeward side, cutting the leaders well in.

Mr. Butler: There is another method that has been practiced to some extent. I have visited many orchards in different parts of the State where there have been continuous winds. And while the method that is spoken of by Mr. Kimball is practicable, there is another method that is preferred by other people. When a tree is planted incline it toward the wind and keep it in that position, and by the time it becomes full grown it will be straight. In regard to the question of cutting every other branch of the apricot, that practice is followed by many fruit growers, and advocated by them, and I think it is worthy of consideration. You get a more continuous crop, and you can keep your tree better balanced without losing your crop.

Mr. Kimball: We have tried the plan of planting the trees so that they lean toward the wind, as advocated by Mr. Butler, but it has not succeeded. The pressure of the wind is not so much against the trunk of the tree as it is against the growing branches. Constant pressure against the growing branches of the tree tends to incline it in the opposite direction, but it has no influence over the trunk.

Mr. Sprague: There is another difficulty in connection with that plan, and that is that your trees will not stand regularly. Some of them will lean one way and some another.

Gen. Chipman: I would like to have some information. In my orchard I have twenty or thirty acres of apricots. We do not get a crop on an average oftener than once in three years. I see somewhere a suggestion—I think from some grower in either Los Angeles or San Bernardino—that if the apricots were pruned shortly after the crop was removed, and then irrigated, that we would have a succession of crops; that by pruning and irrigating immediately after the crop is taken from the tree we would have assurance of a crop the next succeeding year. Now, if any one has had experience in that direction, I would be very much obliged to him for the result of it, because I can easily prepare myself to do both those things.

Mr. Sprague: I think this argument is confined mainly to the southern part of the State, where they of necessity irrigate regularly their apricots and other deciduous trees. I know it is quite a uniform practice there to treat the apricot trees in that way, and there is no great complaint of the irregular bearing of the trees. In fact, the orchards, so far as my observation extends, bear with very considerable regularity; and that is the treatment which prevails in that portion of the country.

Mr. Righter: Down about San José they don't want to irrigate unless they have to. But there are some men there who are well fitted for irrigation; and after they have taken the crop off, some of these men turn on their water. So far as the philosophy is concerned, it is good philosophy. They say a threat on the life of the tree will cause it to bear. In the same way, if you cut the roots of the tree it will temporarily increase its bearing. It is nature's endeavor to repair the shock by reproduction.

MR. JUDD: I would say in regard to Mr. Kell's paper on pruning, that there is *no* system of pruning that will give satisfaction to every fruit grower. There is *no* system of pruning that will do to follow, unless it is confined to one particular variety and in one particular locality. If a fruit grower, starting in to grow a young orchard, followed blindly the general suggestions contained in any paper, there is danger that he will have the experience that some fruit growers had twelve years ago, which cost them thousands of dollars, by following out theoretical propositions. There is no one single variety that will bear the same kind of pruning as another variety. As far as your peaches and apricots are cencerned, I know nothing about them. I don't live in that section of country where that fruit is produced. But when you talk about cherries and pears of all kinds, I believe that I know something about them. I have paid for my experience, and very dearly, too. And of all varieties of pears I don't know two varieties that will bear the same kind of pruning. And of all varieties of apples there are no two varieties that will bear the same kind of pruning. Some varieties of apples it will do to cut back, and some varieties it will not do at all. Among those varieties I will name the Gravenstein and the Bellflower. Just so sure as you cut back either of these when you plant them, just so sure you will have trouble all your life in that orchard, because you have got to keep it up all the time. Some people think an orchard will not bear unless you cover the ground at least three or four feet deep with brush. This year I dug up seven acres of trees, and next year I shall dig up five acres more, just simply because I had ruined them by pruning. We have two brothers in our neighborhood, and they are both raising Bellflower apples. That is the especial product in our section of the country. The older brother planted his orchard so that the trees branched low down, and the younger one pruned his so that he could plow and get up close to the trees. He can plow around them all right. And he headed them back. They should begin to give a crop somewhere about the seventh or eighth year. His older brother is his opposite in every particular. He is considered lazy, so we call his orchard "The Lazy Man's Orchard." Now, when we take visitors around to show them our orchards, we take them to the lazy man's orchard when we want to show them a big crop, and the other orchard that is not owned by the lazy man has not had a single crop on it yet.

MR. ROCK: I believe that if you don't prune them at all you will get more fruit. The less pruning the more fruit you will get.

MR. MOTHERAL: How about prunes?

MR. ROCK: I suppose down your way you don't prune them at all, but in Santa Clara County we have to prune them once in awhile, or the fruit gets so small that we can't see it on the trees, and we have to dig them up.

MR. SPRAGUE: I would like to ask Mr. Motheral if the size keeps up in his section of the country?

MR. MOTHERAL: Well, sir, we will leave that to our exhibition that we show all over the State. We always take the premium as to size.

Mr. Rock: That is when they are green. How is it when they are dried?

Mr. Motheral: I judge Santa Clara makes a little sweeter prune. I believe they claim they have a little better prune; I don't know how that is. But I believe we can grow more wood and larger prunes than can be grown anywhere in the State outside of Bakersfield and Placerville. But we are liable all the while to have our trees die from water, because the water is so close to the surface. Some men are anxious to have all the water possible, and they overdo the thing and kill the trees. We have another difficulty with us that you do not have in your country, and that is alkali. Wherever we have a stratum of clay near the surface we are constantly in danger of raising that alkali to the surface and getting it so strong that our trees will not grow.

The following paper was read by Assistant Secretary Smith:

THE CALIFORNIA PRUNE.

By W. H. Aiken, of Wrights.

The condition that confronts us this year, as prune growers, is that the importers are largely supplying the demand for prunes in this country. They have fixed and maintained a low price, taking advantage of a reduced tariff, low wages, and cheap freight. The united efforts of exchanges and associations in California have not been able to raise the price so fixed, even on a short crop.

The fact that in order to supply the home demand we must make importations unprofitable, does not alarm or discourage Californians. With our sunlight, water, and soil, good cultivation, improved methods of preparation for market, and superior quality as a healthful food product, we can carry the war for trade into Europe, and make our cured prunes an article of the world's commerce. For such a demand there will be no over-production.

There is no product of the soil in this State so profitable, even at present prices, as the prune, and growers are to be congratulated.

I desire to call your attention to the perforation of prunes as an improved method of preparation for curing. I have successfully used the "Burrell needle machine" for three years, and am entirely satisfied with its work, and cheerfully commend its general use. The advantages it has over the "dipper" are many and important, and I will call your attention to a few that will be readily appreciated. The needle points perforate the prunes so that they cure evenly and well, and can be put in bins from trays without the expense and trouble of picking over, and without fear of mold, if properly cured. The "machine" can be taken to the prunes and the best drying-ground, instead of bringing the prunes to the distant "dipper" and frequently poor, badly exposed grounds.

The perforated prunes will stand the severe test of doubling upon the trays, when not over half cured, and finally come off the trays soft and pliable, yet cured to keep and not dried away to skin and pit.

Ungraded prunes can be dried in this way evenly and well in good drying weather, especially if care be taken to dump the doubled tray into another a few days before taking up, which has a similar effect to shoveling over in bins.

The time required by this improved method to cure prunes is not much, if any, longer than when dipped in lye, and the expense is at least one third less.

At present perforated and lye-dipped prunes sell equally as well, but I am of the opinion that the former will soon be preferred, as a prune free from lye and of a better table quality.

In order to learn the comparative quality and merits of my perforated prunes, I submitted them to an analysis in the laboratory of the State University, and quote from the Professor's report:

W. H. Aiken, *Esq., Wrights, Cal.:*

Dear Sir: I beg leave to inform you that the following determinations have been made of your prunes in the laboratory of the Agricultural Department of the University of California:

Pits	12 per cent.
Flesh	88 per cent.
Sugar in whole dried fruit	48 per cent.
Sugar in flesh (excluding pit)	55 per cent.

The amount of sugar is very satisfactory, and considerably higher than previous determinations of dried prunes.

Of the table quality of your prunes, I can only say that they are the most delicious I have ever used, and they have a richness and fruity flavor which I have never seen surpassed. They are a product to be proud of.

This report is gratifying to me in view of the fact that determinations had been made of prunes of the largest and most successful growers in the State.

Taught by experience, acting well our part in the present and confident of the future, let us make a success of our great and valuable industry.

DISCUSSION ON MACHINE PRICKING VS. DIPPING.

Gen. Chipman: I understand the purport of this paper is directed to the advantage of the Morrell machine as against the old process. I have been led into the purchase of one of those machines, and I like it. But I would like to know how to get rid of the bloom. I don't see why there is any objection to the bloom, but it seems that the trade wants to get rid of the bloom on the prune. I had some difficulty in my marketing on that account. It was suggested that my prunes were moldy. I knew that they were not moldy, and I suggested to the purchaser that perhaps he was complaining of the bloom, and I convinced him that he was, and that satisfied him. I see those prunes that are sent up as a sample by Mr. Aiken are entirely free from bloom.

Mr. Wilcox: I will state that prunes processed by me by the pricking machine had bloom. If you will put your prunes in a bin and sweat them for a few days, they will have a rich, even, glossy, velvety color, as nice as any French prune. I think this is a valuable invention. In our Fruit Exchange in San José, Col. Hersey has given his evidence in favor of the machine.

[Mr. Wilcox produced a sample of prunes of the Robe de Sergent variety treated by the pricking machine process.]

Mr. Lelong: We have investigated this matter very thoroughly in districts where there is no water—I am speaking now of hilly sections, where it is impossible to get water unless you carry it up hill—and the pricking machine has been an advantage to those people. But it is not pronounced a success in the valley. There is an objection to the machine there. It has not been satisfactory in the valley, because we have smut on our trees, produced by scale insects, and the surface of the prune that is pricked by the machine will retain that crusty matter, or a slight covering of smut on the prune. The machine does not remove it, and it is not removed afterwards, even if dipped before packing. That has been the experience of those who have tried it. Yet I have been told that there are many growers who advocate the use of this pricking machine.

Mr. Righter: We pricked some, and we don't like it. We have various reasons for our dislike, principally because it does not remove the bloom. When a man comes to look at them, unless he is an expert, he will swear that they are all moldy. Another reason is that it is a dirtier process. The dirt that is on the prune is washed off by dipping in the lye, but in the pricking process it is not. And another thing, we think the skin is thinner after it is dipped. We think the lye has a tendency to cut the outer skin off considerably. We think that by this pricking process it will not make such a soft, delicate kind of fruit when cooked. We are not so certain about that, but we think it is so. Mr. Burrell, who has a machine, wrote me asking if I would let him come down and use one of the machines on my place, and I told him he could come down, and I would give him just what it cost us to run ours. He wanted to know how many prunes we could run through our machine in a day. I told him seventy-five tons. I don't believe he could run seventy-five tons in a week. So he stayed at home with his machine. When it first came out I was very anxious to have it tried. But we have no faith in it any more.

Mr. Mosher: I have had considerable experience with the pricking process, and I think it has some very great advantages. The great trouble with us in dipping our fruit is that it does not cut evenly. Some of the prunes seem to be hermetically sealed to the lye. Consequently we have what we call bloaters, or fruit that dries for a long time and turns yellow inside. You all know what bloaters are, or "frog-bellies." I tried pricking, and I find that the great disadvantage that pricking has is that there is a large amount of gum on the prunes, and the pricking does not dissolve it or remove it; while in dipping, you will find at the close of the day a sediment five or six inches deep, and your lye has to be changed. Of course if you prick them this dirt remains on the prune. I also found that in pricking, it took longer for the prunes to dry—from one to three days longer. Now I have combined the two processes. I dip my prunes in a weaker lye, and then I prick them, and I got most excellent results. And I believe that is the process of the future. Every prune that I dipped in weak lye and then pricked, dried very nicely and quickly, and there were no bloaters. They were graded by machine before they were dipped, and when one was dried, they were all dried; and they were dried evenly and they look very nice. Hereafter I shall dip and prick every one.

Mr. Adams: I have used a pricking machine for two years. Of course I have not been there all the time, but so far as I can learn, there was not a bloater in the whole lot. I inquired particularly last year. I have not seen or heard of any on the trays this year. I have heard some complaints from growers in the mountains in regard to gum, but I have had no trouble with it. But as Mr. Mosher says, it takes a little longer and takes a few more trays to dry them than with the lye process. Quite a number of us have used it in our neighborhood and like it. It is cleaner and better, and if there is any dirt on the prunes of course they are processed again before they finally reach the customer, and any impurity is at that time removed. In places where they are troubled with gum, the dipping in hot water before packing should remove it. I know that with us we are delighted with the process and would not use any other.

Mr. Righter: The material that comes out of the prune after pricking is very sweet. If you don't believe it, just taste it. And to my mind something is lost from the fruit that ought not to be lost. And the fact that it takes longer to dry is an item with us. We dry from 100 to 150 tons a day, and we want it out of our way as fast as we can get it. It costs us about 12½ cents a ton to dip our prunes. We told a man that he could come with his pricking machine and we would give him what it costs us, but he said he could not do it for less than 25 cents a ton. We use one of the Cunningham dipping machines. You can dip them just as fast as you can pour them into the box.

Mr. Wilcox: What is your idea about the quantity that can be put through by the pricking machine?

Mr. Righter: I don't know what you can do. But if you will show me one of those machines that will come anywhere near the quantity which I can put through, I would think it might be adapted to work in a large way. But I never saw one that would come anywhere near it.

Gen. Chipman: I am not working in a large way. But I find that I can get my prunes through more quickly with the needle machine than by the dipping process. I have, however, been fearful that prejudice would rise against this needle machine which would reach the buyer, and that the buyer would put a microscope on the fruit and see if there had not been some needle run into it, and reject it for that reason.

Adjourned to Thursday, November 22d.

PROCEEDINGS OF THE THIRD DAY.

THURSDAY, November 22, 1894.

The convention was called to order at 9 o'clock. Vice-President Buck in the chair.

James E. Gordon, of San José, read the following paper:

DIPPING VS. PRICKING.

By JAMES E. GORDON, of San José.

Since the State Board of Horticulture did me the honor to publish my essay on prune culture read before the San José Convention in 1892, I have received a great many communications on the subject from the East and elsewhere, and quite a number asking about the new pricking machine. When this machine was first introduced two years ago, I at once arrived at the conclusion, by some mental reasoning which I cannot explain, that it would not prove a success, and after listening to all the arguments in its favor here and elsewhere, I am still of that opinion. At the opening of this season considerable prominence was given the subject by our fruit journals, and it looked as though the days of dipping machines had gone by. These machines, as is well known, are made in San José by L. Cunningham, and he informed me that he expected to turn out very few this year, but had actually sold more than any previous season, to practical driers who had seen and rejected the pricking machines.

Gen. Chipman stated here that lye dipping was a dirty process, but that depends on the operator and the machine. There are dippers that do dirty, sloppy work, but the Cunningham machine in the hands of intelligent workmen is the cleanest process known. It does indeed accumulate and wash off an enormous amount of dirt, but in the pricking process all this dirt mixes with the juice which the pricks produce, and adheres to the fruit, and consequently causes it to weigh more, which increased weight is one of the strongest points claimed for the pricking machine.

It is claimed that "bloats" or "frogs" so common in lye dipping are avoided by this process; but "frogs" are not a result of processing, but of climatic conditions. Around Saratoga and Los Gatos, where we have no fogs, these "frogs" or "bloats" are very rare; whereas, in foggy districts they are very common, whether dipped or pricked. They are caused by fermentation, and being easily distinguished can be picked out, so as not to affect the balance; but pricked prunes are *all* more or less fermented, hence that dull, dark, dirty, heavy look when compared with the light golden meat of lye dipped. This soft, mushy condition makes it necessary to market them quicker than lye-dipped. For the same reason it takes longer to dry them—about two days longer in an ordinary season—which means an additional expense of 20 per cent for trays, and

20 per cent more drying room. With driers or associations handling 1,000 to 3,000 tons, as some of our Santa Clara associations do, this is a most important consideration.

One of our largest concerns, the Berryessa Fruit Growers' Union, discarded the prickers after a fair trial, because they badly mutilated the soft fruit—a very serious objection; and Mr. Righter, representing another of our largest associations, the Campbell's Fruit Growers' Union, has just told us that on no account would they give up their Cunningham dippers for the new process.

The saving of fuel and lye has been referred to, but this is a fallacy. With a Cunningham dipper four men can handle 40 tons per day at a cost of $5 for fuel and lye; but four men with a pricking machine cannot handle 20 tons, the consequent loss for labor far exceeding the cost of lye and fuel.

The pricking boards do not last long, owing to the constant breaking of the needles, and one firm alone had 250,000 needles broken last season. Now, what becomes of these needles? Many of them must remain in the fruit and be eaten. Some fastidious people object to lye-dipped prunes, because they fancy they can detect a flavor of lye; but this is an error, as it all evaporates while exposed in the drying yard, and the very small remnant that remains, we are told by Professor Hilgard, is converted by the action of the sun into carbonate of soda, which is a benefit, and not a detriment. I leave you to choose between this and the flavor of dry fungus and highly tempered needle points which don't evaporate or grow dull.

The strongest advocates of this process admit the necessity of dipping in districts where the black scale deposits its fungus, and as that is prevalent in our principal prune districts, I don't see how we are going to dispense with dipping unless we intend to compete with Turkish and similar nasty fruit and restore to France the market for the better grades.

I believe a pricking attachment to a Cunningham dipper can be made so as to combine the good qualities of both, but clean water and plenty of it must ever remain a most important factor in the production of first-class prunes, and California should never export any other kind.

MR. WILCOX: I have used the pricking machine two years, and this paper controverts all my experience and also the experience of Col. Hersey. He received a letter saying that the prunes sold by him were the best fruit on the market.

MR. ANDERSON, of Shasta: This season a neighbor of mine used a pricking machine, and I noticed that he had from twenty to fifty "frog-bellies" where he had one by the lye process.

MR. ADAMS: We all have to try. My experience has been different from that of Mr. Anderson's neighbor.

The Chair announced the subject for consideration to be: "Insect Pests, Fungoid Diseases, and Remedies therefor;" also, "Introducing and Fostering Parasitical Insects."

OUR INSECT FRIENDS.

By Prof. A. J. Cook, of Pomona.

California has much to be proud of, but it is to be doubted if in all the long list of her achievements she has wrought better in any work or suggestion than in the importation of beneficial insects. We think with admiration of the introduction from Australia of *Vedalia cardinalis*, and the rapid extermination by it of the cottony cushion scale. It was a magnificent conception, and grand in the blessed result of ridding California orchards of one of the worst of insect pests. The importation of the *Rhizobii* bids fair to be a close second in importance to that of the *Vedalia*. While the *Icerya purchasi* was perhaps a more serious pest in the citrus orchards than is the *Lecanium oleæ*, yet the latter is exceedingly destructive and reaches with its blighting touch over into the olive orchards, where it is even more harmful, possibly, to the trees than to the orange and lemon. If *Rhizobius ventralis* will conquer the *Lecanium hesperidum* and *Lecanium pruinosum* as effectively as it has exterminated the black scale in the extensive orchards of President Ellwood Cooper, and there is much reason to hope that it will do so; then, indeed, we may regard this later importation as no less a benefaction to our State than the introduction of the *Vedalia* itself.

But the present value of this experiment, great as it is, is by no means all. Are there not yet the red, the yellow, the purple, the pernicious scales, etc.? These and many other destructive insect pests imperil our California orchards and threaten the farmer and orchardist of other States and countries. There is good reason to hope and expect that as effective enemies for each and all of these exist, as those already found for the white and the black scales. If they exist, can we doubt, in the light of the happy experience already enjoyed by California, that they will be found? To argue otherwise would be to affirm that our fruit men are asleep. Here then is inaugurated a method of combating these terrible foes that is fairly limitless in its promise of help to the fruit grower.

Old Massachusetts might well have come to young California for suggestion, and have saved the hundreds of thousands of dollars already expended in her fight with the gypsy moth. And the end is not yet. Very likely a single thousand might have secured the Chalcids and Ichneumonids that would have checked at once the advance of the gypsy moth, and would soon have vanquished it from the forests and orchards of the "Old Bay State."

And it was California that inaugurated this new and marvelously effective method of dealing with our insect foes. Surely too much praise cannot be awarded to President Ellwood Cooper and others, who, even in the face of most discouraging circumstances, demonstrated the possibility of the utter extermination of our most dreaded insect pests, and that with so little of labor and expense. There is every reason to expect that further effort in the introduction of beneficial insects will be crowned with no less success than has greeted the trials already made.

There is another field for effort and experiment that holds out hardly less of hope and promise than that already spoken of. I refer to the wise distribution of our native parasitic and predaceous insects.

Two years ago last January, I visited and inspected closely the large olive orchard of Mr. A. R. Meserve, near Pomona. I found it seriously attacked by the black scale. I also discovered very numerous pupæ and imagos, or mature beetles, of the twice-stabbed ladybird, *Chilocorus bivulnerus.* I then predicted to Mr. Meserve that very soon his orchard would be free of the blighting scales. The prediction was not a vain one. To-day the Meserve orchard is very clean of *Lecanium oleæ*, and the ladybirds are marching on. To-day the Olmstead orchard, two miles east of Pomona, is just where the Meserve orchard was two years ago. I fully believe that the *Chilocorus* would clean it of its destroyers, but they are too tardy to be wholly satisfactory, as the orchard would suffer seriously before the scales were all destroyed. It was my happy privilege to liberate in that orchard not long since over one thousand of the more fecund *Rhizobius ventralis*, hoping and expecting that the fight might be thus made more brisk and the sooner terminated. I am happy to say that I have found these latter breeding, and I expect much of them.

We see, however, that our own native twice-stabbed ladybird is enough and too much for the black scale, and if they were introduced in goodly numbers, a not very difficult task, into any orchard as soon as the black scale was observed, we cannot doubt the speedy discomfiture of our foes. Is it not more than probable, then, that the wise and timely distribution of *Chilocorus* would be hardly less a godsend to our orchards than the introduction of the more prolific, and so more speedily effective, Australian species of ladybirds? With an equal start our own ladybirds would be sufficient. In an orchard already in full possession of the enemy we need a more active soldiery.

A few years ago, a species of *Lecanium*, very similar to *Lecanium oleæ* and *Lecanium pruinosum*, attacked the forest trees of Michigan. For three years their numbers and mischief grew, until it seemed that many of our most valued forest trees, to wit: linden, maple, tulip, hickory, etc., were surely doomed. This third year a minute Chalcid fly was discovered, which was observed to be distancing its victim, the scale, in the race of prolificness. In an address that autumn before the American Pomological Society—the same that is to honor our State with its presence the coming winter—I predicted that the scale which was then menacing the very existence of our grand forests was in course of speedy extinction. So well did I reckon the ability of the Chalcid hosts, that two years later I could with the greatest difficulty find specimens of the scale to show my class. Two years before there were countless millions, now there was scarce one to be found. I have wished ever since that these Chalcids might be turned loose in the scale-infested orchards of California. True, they might be fastidious and refuse a banquet of black scales, but I should not expect it, and I confess to you that one of the chief inducements that led me to leave a delightful home and work in Michigan was the hope that I might be so happy as to aid in the introduction of this scale-devouring Chalcid in the manaced orchards of the Golden State.

In the summer of 1889, the wheat crop of Michigan, Ohio, and Indiana was attacked by millions of the grain aphis, *Siphonophora avenæ.* It seems as if the entire crop was doomed to utter destruction. All at once the aphids were attacked by a minute Brachonid fly, new to science, which I described as *Aphidius granariaphis.* In a bulletin which I issued July 10, 1889, we find: “Ten days ago, June 30th, the heads of wheat were crowded with hungry aphids, or plant-lice. These myriad lice, often five or six around a kernel of wheat, and two hundred on a single head, were sucking the sap and very vitality from the forming kernels. They were rapidly blighting the grain, and unless some friendly hand were raised against them our wheat crop would be utterly ruined. Even then, when the lice were countless in numbers, and when the winged forms were rapidly spreading to the oat fields, the hand of deliverance was easily discerned in the comparatively few but wondrously prolific enemies of the lice, which had already sounded a halt in the march of destruction. A week later and the enemies of the aphids are in the ascendency, and to-day the lice are nearly exterminated, the wheat crop is rescued, and the oat crop saved. Close observation demonstrates these facts. Even the careless eye can see the savage Braconids dining on the lice, or the fatal egg laid, which dooms the louse that receives it. These tiny flies have been the great factor in ridding our fields of the pestiferous lice. Tiny as they are, they will save millions of dollars to the farmers of Michigan and adjacent States during this single year." I may add here that in another week the entire wheat crop of that year would have been ruined; as it was, about one third of the crop was saved.

In the last few weeks I have received twigs of lemon and orange trees literally covered with the soft brown scale, *Lecanium hesperidum.* I need not say to those present that unless these scale insects are removed or destroyed, that the infested citrus trees soon will be. Some of these brown scales I find very generally punctured—often six, seven, eight, or even nine out of ten, are thus destroyed by a Chalcid parasite. These Chalcid flies will soon be at starvation's door, as all the scales will be eaten by them. How plainly is it, then, the part of wisdom to take twigs and branches from these trees and hang them in other trees that are suffering from this *Lecanium hesperidum*, and without the presence of the parasitic Chalcids.

Within a few weeks I have received the yellow scale, *Aspidiotus citrinus*, thickly covering oranges and orange leaves from Sacramento. I have received the same from the region of Alhambra, near Los Angeles, which were almost exterminated by Chalcid flies. Who will say that it would not be the very height of wisdom to bring the yellow scales from Alhambra to Sacramento. It would save from death the Chalcids of the Alhambra district and seal the doom of the yellow scale insects of Sacramento.

I have said enough to show that we have the means right at hand, right in our own State and country, of staying, possibly of exterminating, some of our worst insect pests. A wise and timely distribution of our own *Chilocorus*, the introduction of the Eastern scale-destroying Chalcids, the importation from over the Rockies of such Braconids as those that so quickly banished the grain lice, or the distribution of the Chalcid flies that are locally banishing the soft brown and yellow scale insects, to localities where they are yet strangers; all of this could be done at a very light expense, and with great if not positive promise of tremendous benefit.

Spraying and fumigation often pay a good profit on the expense. But they are expensive, often injurious to fruit and foliage, and are rarely ever so effective as to make a speedy repetition of the same expensive treatment unnecessary. These parasitic and predaceous insects are far less expensive, do much more thorough work, and never work any injury to the fruit, foliage, or trees. Certainly no one should think of spraying for such insects as the *Icerya purchasi*, when we have a *Vedalia cardinalis* right at hand, to be had simply for the asking, and which is a safe, sure, and absolute preventive of harm and danger. We must keep the *Vedalia*, and need all of the fluted scale that we can discover to feed them; and yet I have seen more than once the past season men engaged in fumigation, treating many trees, because a few of these cottony cushion scales had been discovered on a single orange tree. Such discovery should rather please us, as affording an opportunity to feed the little Australian benefactor, which we cannot afford to starve or permit to be banished from our orchards.

If I may make suggestions, I would urge that Mr. Koebele be secured for a series of years to look for foreign predaceous and parasitic insects. The expense would be a mere bagatelle, the possible, yea probable, benefits would be a thousand fold more than the expense.

Mr. Alexander Craw, under the direction of the State Board of Horticulture, has done an excellent service the past season in collecting and distributing the *Rhizobbii*, but he cannot possibly do all that needs to be done. In both Southern and Northern California there should be an expert entomologist to study closely the orchards, to give advice, and to collect and distribute, or arrange for the distribution of, any and all such insects as promised aid in ridding the orchards of insect foes. The fruit interests of California are immense, and far more than warrant the slight expense required to secure competent service. If the fruit men would unite in demanding such service, there can hardly be a doubt but that the Legislature would gladly grant their request. And once the positions created and wisely filled, there would no longer be any question of the wisdom of the action, or difficulty in securing enactments continuing the service.

INSECT PESTS AND THEIR PARASITES.

By Prof. T. N. Snow, of Santa Barbara.

Inasmuch as my subject concerns every citizen of the State in general, and every fruit grower in particular, I deem no apology is necessary in presenting this essay for your most careful consideration. My theme is not new. It is as broad as the earth and as long as the memory of man. It is a matter of deep interest to every nation in the civilized world, and the interest is increasing as the years go by.

On an occasion like this, I can give but a brief epitome of the insect history under discussion; many points on which I would like to dwell must be passed in silence, or with a few words. I make statements which others have already made, but I will endeavor to give credit where credit is due, and if I overstep the time allotted to this paper, I trust your President will promptly "call a halt."

There was a time prior to written history, when, without doubt, injurious insects did not exist in numbers sufficient to be troublesome. Insect life, like animal life, was but a part of one harmonious whole in the economy of nature. It was as necessary to the maintenance of an equilibrium in the work of creation as the life of man, and each class, and each individual of each class, dwelt in unmolested security.

Man seems to have been the first to err, and as a punishment for his error, insects became a pest. See Exodus, viii, 21-24, which reads: "Else, if thou will not let my people go, behold, I will send *swarms of flies* upon thee," etc.; "and the land was corrupted by reason of the swarm of flies." Now, the word in the original, translated "swarms of flies," means a mixed multitude of *noisome insects.* (See biblical footnote.) But when Pharaoh repented, "the Lord removed the swarms of flies (insect pests); there remained *not one.*"

Searching the records of history, I find no reliable mention of insect life worthy of note, till the last half of the last century before Christ; when Virgil, the finest of Latin poets, sang his Bucolico and Georgics, and in general terms dwelt upon the "blights" that fell upon and devastated the flocks, the fields, and the fruits. But no particular insect pest is defined. Then Pliny, the elder, the greatest naturalist of the first century A. D., compiled an exhaustive treatise on natural history, including many other branches of study. He divided insects into two great classes: the *coccids* (those preyed *upon*), and the *coccinellidæ*, or predaceous insects, the true ladybirds of to-day. He did not describe the former as injurious or as pests. Pursuing our investigations, we are arrested by the works of Linnæus, the naturalist of the eighteenth century. Born in 1707, he lived at a time contemporary with some great scientists, and had free access to their valuable libraries, which he used to great advantage. He gave us many classifications of animal life, and entomology received a large share of his attention. But he gives us no account of insect ravages.

Studying the natural history of Europe and Asia through succeeding years, from the "Pillars of Hercules" to the "Holy Land," I find no complaint made relative to insects that were destructive to grains or fruits till the last quarter of the eighteenth century, some fifteen years after the voyage of Captain James Cook. In 1768, under the favor of King George III, and under the auspices of the Royal Society of England, Captain Cook sailed from the harbor of Plymouth, accompanied by Sir Joseph Banks, President of said society, and Doctor Solander, a learned Swede (who was an adept in natural history), to observe at Tahiti the transit of Venus, which was to occur in June, 1769. After leaving Tahiti they sailed about the South Seas, visited New Zealand, and reached Australia in November, 1769. Here they spent several weeks, and Messrs. Banks and Solander secured several hundred species of plants hitherto unknown in England.

On page 9 of Putnam's compilation, we find this statement: "For some time the 'Endeavor' [the ship in which they sailed] remained in the bay, and her captain, with Banks and Solander, made many excursions into the country, during which the last two obtained such a variety of flowers and plants that the place was called Botany Bay." Other references to the collection of plants made by Banks and Solander will be found in the annual address of your President before the Seventeenth Fruit Growers' Convention, published in the biennial report of the State Board of Horticulture for 1893, pages 245 and 246.

These plants were carried to England and thence to all parts of Southern Europe and to the western shores of Asia. Some twelve or fifteen years after this voyage, we hear the first complaints from the fruit growers that injurious insects were destroying their orchards and vineyards. The evil increased in severity and spread over states and countries of the Old World. From these facts it appears to me that Australia *is*, and *has been*, the home, *the birthplace*, of insect life, and that if insect pests have been propagated *there* and sent abroad, we are to expect, and *shall find*, parasites in the same locality to follow the movements of the former.

In the early part of the nineteenth century but few Americans relied, to any great extent, upon importations of nursery stock of either fruits or flowers from foreign countries; but for the last forty years a kind of mania has possessed people in general, and specialists in particular, to vie with each other in owning the largest importations from every country and every clime under the sun. With these additions to our botanical gardens, we have admitted to our homes innumerable insects, hitherto unknown to us, and these, too, of a questionable and in most cases a decidedly objectionable character. These, like the pauper element of our immigration, form the army that we are contending against to-day; and it requires wise and skillful generals, and active, sturdy, and faithful privates in order to win the battle.

We come now to speak more particularly of the insects which have proved to be such a scourge to our country in more recent years, and especially to our own State.

First in the list, I will mention the *Icerya purchasi* (or cottony cushion scale). I believe Santa Barbara claims the right of settlement or colonization of this plague. It was brought from Australia in the early "seventies," with a small importation of a dozen lemon trees, and in a few years it had covered Southern California and threatened the extinction of our fruit industry. Then followed in quick succession the black scale, the red scale, the yellow scale, the San José, the apricot, the soft orange, the hemispherical, the oyster-shell, the convexus, and other scales; the orange aphis, the walnut aphis, and all the known aphides; together with mealy bugs, codlin moths, and other pests, till the brain is confused with the enumeration. California appeared to be doomed as to her fruit culture.

Remedies were tried, recommended, and required to be used. Thousands of dollars were spent in the attempt to fight these evils by artificial means. What were the successes? Let us see. Six years ago to-day, what was the condition of the six southern counties of this State in regard to the *Icerya?* It had laid waste nearly every citrus orchard and was marching with rapid strides upon all deciduous trees, shrubs, and plants. Mr. Albert Koebele had been sent to Australia to discover, if possible, a parasite for the pest. Not even the "oldest inhabitant" of that far off land knew that such a remedy existed. Mr. Koebele, soon after his arrival, observed some cottony cushion scales, and upon close inspection saw some larvæ eating them. He saw some pupæ and "lady-bugs" near by. Gathering a few of each, and caring for them a few days, he watched their development, and found that the three were only different conditions of the same insect, and thus he secured for us the *Vedalia cardinalis*, the savior of our fruits and flowers at that juncture.

Then the black scale demanded our attention, and that, too, with earnestness. Seeing the defeat of its former rival, it put forth its best efforts to gain the orchard, the field, and the forest, before man could circumvent him. Well nigh did he accomplish his work. The "cold water treatment" gave him new vigor. The "kerosene emulsion" he evaded as much as possible (the same as rich men evade their assessments and taxes, or as politicians the election laws), and worked the harder "on the sly" while men slept, and the whole land was blackened. Then came the spraying pump with its insecticides, etc., and thousands of dollars were invested in that scheme. Then the "fumigation fad" reared its tents, and the cry of "death to the black scale" was raised. The like treatment was practiced upon the other scales and pests.

Mr. Koebele was sent a second time to Australia to discover, if possible, a conqueror of these evils. * * *

On the 15th of May, Mr. Cooper liberated a small colony of beneficial insects—of *Rhizobiids*, perhaps ten or fifteen pairs of healthy beetles—upon a tree in the center of a fifty-acre olive orchard, the entire growth of which was as filthy with black scale and their debris as could be found in the State. These increased rapidly, and during 1893 over five hundred colonies were sent out to various parts of the State. This year it is estimated that not less than a quarter of a million beetles have been distributed from the olive orchards at Ellwood. Their work has been a most complete surprise to all who have visited the place. The trees are clean and healthy, their growth this year is vigorous, and the fruit abundant and of fine quality.

During the last four months I have personally gathered many thousands of the *Rhizobiids*, which I have distributed to various parts of Santa Barbara County, as well as to the more southern counties, and other points in the State. Many of these I obtained from the orchards of Messrs. Hemenway and Hails, seven miles west of Santa Barbara, where a colony of fifteen in the former and only five in the latter were placed in October, 1893.

Other portions of our county show excellent work from these ladybirds. Last month I visited "Glen Annie," the home of the late Col. W. W. Hollister, and in company with the present proprietor, Mr. Nicholas Den, inspected his orange grove of 1,100 trees. I had expected to be able to gather many thousands of the *Rhizobiids*. For hours we searched; we scanned the trunks, the branches, the leaves, and as a result I secured six *Rhizobiids* and eight *Vedalias*. Not a live scale; not an egg nor larva of the scale could be found. The trees were clean, bright, and vigorous. The crop two years ago required every orange to be washed and scrubbed before marketing; the last crop needed not to have an orange cleaned.

With the intention of being permanent residents of the United States, these foreigners became naturalized at once, not waiting on the "law's delay," and thus far we have found them a peaceable, intelligent, and industrious folk. In appearance they would at first sight be considered straight, out-and-out black Republicans, but a close study of their character and principles will show that they are the "coming party of radical reform," whose platform is broad and strong, and every plank of it upholds home industries, and protects the working class. They favor "equal rights," and since there is enough for all, they oppose monopolies, "spraying trusts," and "fumigation combines." "No fusion" is their motto. They promptly settle their own bills as they go, and make safe deposits in every orchard and in every tree.

As an illustration of the comparative merit between the efficiency of the beetle and artificial applications, I will instance the orchard of Mr. Packard, at Montecito, Santa Barbara County. During the last twelve months this orchard has been thoroughly sprayed three times, with the exception of some half dozen rows of trees through the center; these were colonized with *Rhizobiids* in October, 1893. The condition of the orchard to-day shows 500 per cent in favor of the parasites. This proves two things: First, that the "free labor system" of the latter is far preferable to the "forced rule" of using artificial means; secondly, that the *Rhizobiids* will *not* work on trees frequently sprayed. You might as well expect to find sound morality in a community or household where tobacco and whisky rule supreme. These parasites do not confine themselves to the black scale. Only last week, in inspecting an apple orchard situated about seventy yards from the orange grove of Charles Hails, above mentioned, large numbers of the *Rhizobius ventralis* were found eating the San José scale with which the apples were infested. I have found them in multitudes feeding on the walnut aphis, and also devouring the red scale of the orange and the apricot scale.

The rapid increase of the scales has caused many to think it impossible for a minute beetle to be able to contend with and exterminate such an army. Let us calculate a little. Professor Coquillett once stated that he had counted 3,000 eggs beneath a single black scale. Prof. A. J. Cook, of Claremont, told me in September that he had counted 1,800. He also stated that he had found 189 black scales on one olive leaf. If we take Professor Coquillett's estimate of 3,000; and supposing that Professor Cook overlooked eleven scales (we will call it 200 scales to a leaf), we shall have 600,000 young scales to one leaf when the eggs hatch. Multiply this by the 10,000 leaves upon each tree and we have 6,000,000,000 on a single tree—a pretty strong force to meet.

We will now put a pair of *Rhizobiids* upon this tree in springtime, and if the location is favorable we shall have from 50 to 200 eggs for the first brood, and there will be not less than six (possibly there will be ten) generations during the season. Taking the lowest estimates 50—and six broods—we shall have 15,625,000,000 (or in round numbers 16,000,000,000) of beetles in one year. The life of a beetle from the egg to its death is perhaps thirty days. Please divide the supplies among them. Why, allowing that the birds, the toads, the lizards, and other foes destroy fifteen sixteenths of the *Rhizobiids*, there will be but six eggs (or scales) apiece for the one sixteenth to subsist upon for thirty days. Just try for only one year (nay, for a single month) to live for thirty days on a half dozen little eggs, and my word for it, you will not be troubled with gout nor dyspepsia. But it is claimed that "the shell of the scale is so hard that it is impregnable to the ladybird." Whoever heard of an epicure calling for a five-year-old hen, or a ten-year-old gobbler for his plate? No! It is spring chicken that he wants; and these *Rhizobiids* have a taste for the good things of the season as well as their higher brothers. During the cold winter they subsist by "hunting and fishing" for such game as they can find; living on short rations; delving and prying for a few eggs that they are fortunate enough to find, and sleep away the tedious days, anticipating the warm time coming when they can feast and fatten on the young scales as they hatch.

In estimating the cost of importing predaceous insects, I find that the expense of sending Mr. Koebele to Australia the first time was met by the Federal Government, through our friend Hon. Frank McCoppin. The amount was $2,200. The State Board of Horticulture sent him a few hundred dollars, as a voluntary assistance.

On page 5 of the report on the Importation of Parasites and Predaceous Insects, 1892, I find that this State appropriated $5,000 for the purpose of sending Mr. Koebele a second time to Australia, and that the General Government, through the Secretary of Agriculture, paid his salary, while our State paid his incidentals. The amount actually paid was $3,700; the rest was returned to the State. When we compare this outlay with the $375,000 which Massachusetts has recently expended for the extermination of a single injurious insect (the gypsy moth), it is not to be mentioned. The whole cost to this State thus far has, probably, not exceeded the amount which some individual orchardists have spent for artificial remedies in one year. * * *

I trust that the next Legislature will show that there has been a decided improvement in the minds of the people, by appropriating a sufficient amount to prosecute the work of importing beneficial insects. It is true we have several that are doing excellent work. During the past year I have noticed with pleasure the progress of not only the *Vedalia*, the *Rhizobius ventralis*, and the *Debelis*, but the ten-spotted, the red, the yellow, the gray, and the twice-stabbed ladybirds, the *Orcus australasia*, and other valuable laborers. But we still need some for the codlin moth, and some more for the woolly aphis and other pests, and we shall be glad to have many for each pest, that we may make success doubly sure against all disasters.

A letter received last month from Mr. Koebele, who is now in Australia for the Hawaiian Government, states that he found no less than twenty-four varieties of ladybirds in one orchard, and more than fifty on that continent. *We want them all.* * * *

Let this convention formulate some plan of action, and present a petition to the next Legislature that shall secure the desired assistance which we so much need. Let harmony prevail in all the deliberations of these sessions, and in all the efforts put forth in the interests of the orchardist and the husbandman. So shall our storehouses be filled with the fruits of the soil, and our barns shall burst with plenty.

BENEFICIAL INSECTS.

By J. F. McIntyre, of Fillmore.

In times past men have noticed that insect pests apparently came and went in cycles of time, and when a pest would disappear they would say that it had run its course. It remained, however, for bright Californians to discover that a bad insect pest was simply an insect that had in some way become separated from its natural enemies and allowed to breed for a time unmolested. If the pest is only separated a short distance by land its enemy may soon overtake it and cut short its career; but when a pest is moved across the ocean without its natural enemy, and becomes established in a new country, which is frequently the case with scale bugs, it is liable to do a vast amount of damage before some native predaceous or parasitic insect acquires a taste for it, or its natural enemy is carried across the ocean. Scale insects adhere firmly to the trees and plants on which they live, and consequently are easily transported alive from one country to another, while the ladybirds, their worst enemies, naturally drop from the trees when disturbed, and are left at home when the trees containing the scale are shipped to another country. This State has twice tried the experiment of sending an expert entomologist to the home of the scale to find the predaceous insects that keep them in check in their native country, and each time the experiment was "eminently successful." The experiment will always be successful if the entomologist sent is competent, and the insects are properly cared for on their arrival in this country. When we consider the ratio at which scale bugs increase when unmolested by predaceous or parasitic insects, we can readily see, if they were allowed to keep on increasing at this ratio for twenty years, they would not have standing room on the face of the earth; therefore, every scale bug must have a natural enemy which keeps it in check.

It should not require a great amount of effort on our part to convince the next Legislature that the money expended in searching for predaceous insects was the most profitable investment ever made by the State, and to persuade it to continue this very profitable business. In Professor Koebele's report he mentions several ladybirds which would be worth thousands of dollars to the State if successfully introduced. On page 16 he says: "A large number of predaceous insects were found preying upon the red scale in Australia, and one of the Rhizobiids, *Rhizobius satellus*, was always present in extremely large numbers." On page 12 he says: "*Rhizobius satellus* are the most numerous insects preying upon the red scale in Australia;" and on page 34 he tells about three wild lemon trees that were so badly infested with red scale, that any fruit grower in California would have given them up for lost, when *Rhizobius satellus* stepped in and completely cleaned the trees in about six weeks. What further evidence do we need to be convinced that this is the ladybird that is destined to clean out the red scale in California?

In Ventura County the black ladybird (*Rhizobius ventralis*) is increasing rapidly on orange, lemon, olive, and apricot trees infested with black scale, and we have already distributed quite a number of colonies of home-grown beetles. We are confident that this ladybird will clean out our *Lecaniums* as effectually as the *Vedalia* cleaned out the *Icerya*.

In Los Angeles County a small black Scymnus (*Scymnus nanus*) has been found feeding on red spider. Mr. Scott says it breeds rapidly and has done good work during the past season in cleaning out this pest.

The woolly aphis has done extensive injury to the apple trees in Ventura County, infesting all kinds except those grafted on pear roots. If we can keep the aphis out of the ground by grafting on resistant roots, it will not be very difficult to keep the trees clean by Mr. Cooper's plan of placing the eggs of our common ladybirds in the trees near the aphis.

The pernicious scale still thrives with us, although we have the twice-stabbed and brown-necked ladybirds to feed on it; but so far I have not been able to find the internal parasite, *Aphelinus fuscipennis*, and this probably accounts for the fact that the scale is harder to keep down here than it is in Santa Clara County.

This business of collecting and distributing ladybirds and parasites to all parts of the State where they are needed is getting to be such a big thing that we should adopt some system that will facilitate the business, and make it known where the insects can be obtained.

I would suggest that the State Board of Horticulture ask every Horticultural Commissioner in the State to make a list of all the predaceous and parasitic insects in his district that can be found in sufficient numbers for distribution, and send it to the State Board, to be printed in the form of a bulletin, with full instructions for collecting and sending such insects by mail. Such a bulletin issued annually would have a strong tendency to bring about reciprocity in the distribution of these valuable insects, for it would show at all times in what counties they were numerous, and who to send to for them. Some of the new ladybirds sent over from Australia by Professor Koebele are almost sure to turn up in large numbers in some part of the State, and if the attention of the Commissioners is turned in this direction they will take pride in being the first to find and report these new friends.

INTRODUCING AND FOSTERING BENEFICIAL INSECTS.

By Alexander Craw, State Quarantine Officer.

Man has naturally a good opinion of himself, for is he not the crowning work of creation, the cap-stone of the great structure of the animal kingdom, to whom was given "dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth"? With all this power in his possession he never dreamed that a little bug, no bigger in many cases than the head of a pin, could ever get the better of him, or that others could ever help him out of his troubles. So when, in our early orcharding experience in California, we found these little pests becoming too numerous for our profit, when we found them spreading from tree to tree, from orchard to orchard, sapping the very life of our trees and destroying their fruitfulness, we undertook to extirpate them by some simple process evolved out of our superior knowledge. But it didn't work. We renewed our efforts, fell back upon our knowledge of chemistry, invented sprays and washes, tried all sorts of gases, killed a great many of our trees, but still the pests would not be extirpated. In spite of all our ingenuity and our ponderous methods, the little pest, hidden in cracks and crevices, came forth after the combat, renewed for the struggle, and in a short time were as strong as ever. In spite of all we could do with our costly apparatus, expensive compounds, and wearisome labor, we were at last forced to acknowledge them the victors, and all we could hope for was to save a share of our products from them. And yet all this time, had we not relied so much upon ourselves, there were other little friends, more powerful, more patient, more persistent than we, ready to do our work more effectively, and at no cost to us, if we would but encourage them in their labor.

So it at last dawned upon our understanding that there exists a complete set of checks and counter-checks throughout all the natural world; that, as in mechanics, action and reaction are equal and contrary in their effects, as there cannot be a positive without a negative, so there must be some check upon these abominable scale bugs, which we had not discovered. For were there nothing to keep them in check then the whole earth would soon be covered with scale bugs, and as they had had full sway before man undertook their subjugation and had not made such wonderful headway, there must have been something or other that preyed upon them, and this something was what we wanted to discover and encourage.

We found the Lace-winged fly was working for us, the Ichneumons, Syrphus, and Tachina flies were doing good work, and, looking closer, we found minute Chalcids preying upon our foes, and above all we found the pretty little ladybirds devoting their whole existence as larva and imago to thinning out the pests that were annoying and ruining us. We had at last found the great solution of our troubles, and gradually learned to place more reliance upon these little fellows than upon our own personal efforts. They worked while we slept, when we were at church or attending conventions; they never took a vacation or grew tired; they reached under the foliage, in the crevices of the bark, and impelled by hunger kept constantly at work eating up the pests that ate up our profits. Since that time we have gradually been changing our tactics in the fight, and while we are not yet prepared to abandon our own methods altogether, we are relying more and more upon the work of parasites in the orchard, and less and less upon artificial measures. The greater part of our effort now is to discover new parasites for the different scale insects—for the same parasites do not live upon all—to study their habits, take measures for their propagation and distribution, and foster them by all means in our power.

As fruit production is the principal industry and a great source of wealth to our State, we have been forced to give greater attention to this question of pests than any other section of the Union, if not of the world. In the matter of fighting pests with parasites, California is the pioneer, and other States and nations are benefiting by our experience. The Sandwich Islands have secured the services of the most efficient worker in this line—Mr. Albert Koebele—and his work promises to redeem the islands from threatened ruin. In a letter from Joseph Marsden, Commissioner of Agriculture and Forestry for the islands, he says of one introduction of Mr. Koebele's, a colony of which he was kind enough to forward me:

> I do not know whether you have this insect (*Chryptolæmus montrouzieri*) in California or not, but it has worked wonders here. Our citrus trees were threatened with extinction by a blight, which Mr. Riley named *Rizzococcus*, but which Mr. Maskell says is *Dactylopius albizzia*. In the short space of six months this ladybird has nearly cleaned out all the scale—so much so that I find it difficult to procure for my breeding-cages, from which I have bred hundreds of colonies and distributed them all over the islands. This insect is also doing good and rapid work in Kona on the *Pulvinaria*, which has been such a drawback to the coffee planters. It also feeds on the *Dactylopius longifilis*, which is particularly numerous on the Samand trees. The larvæ of the ladybird are now seen by the tens of thousands covering the trunks of trees and the walls of buildings. I would be much obliged if you would send me a colony of the *Novius Koebelei*, and if possible a ladybird that will feed on the red spider (*Tetranychus telarius*), which has made its appearance on some coffee trees in the district of Hilo. Of course I will write to Mr. Koebele to send me some insect that will prey upon it, but it will be some months before I can obtain them from him. He is sending many ladybirds, but he is not yet aware that the red spider has made its appearance here.

Cape Colony has watched with interest the experiments of California, and it, too, has followed our lead.

And here I would contrast at once the work of Massachusetts, a comparatively non-fruit-growing State, and California, where fruit is a great industry, and at the same time illustrate the point I first made, that the ponderous efforts of man are not comparable with the works of nature in overcoming the spread of pests. The work of the gypsy moth in Massachusetts is familiar to most of you. This was introduced some years ago without its natural enemies, and, freed from restraint in this land of the free, it began to spread. There were no counter-checks here, and this pretty insect soon threatened the whole country with destruction. Laws were passed for its extirpation, sprays and washes and insecticides were resorted to, pumps and machinery were brought into play, but all the efforts of man could not check its spread. No efforts were made to introduce its natural parasites, and as a result the State of Massachusetts expended over $300,000 in three years to get rid of it, and didn't do it. I cannot resist giving you the cost of last year's work, as published by the Board of Agriculture for Massachusetts. Here are the figures:

Balance on hand, January 1, 1893	$5,672 17
Appropriation	100,000 00
	$105,672 17
Expenditures.	
William R. Sessions, expenses	$9 79
N. S. Shaler, expenses	43 00
Francis H. Appleton, expenses	41 43
E. W. Wood, expenses	16 06
C. H. Fernald, expenses and remuneration	730 16
E. H. Forbush, director, salary	2,400 00
Bookkeeper and clerks in office	2,165 32
Traveling expenses of director and men	1,414 24
Teaming, livery, and board of director's horse	1,888 37
Wages of men	56,874 33
Rent of storehouse and office	297 00
Supplies, tools, and insecticides	10,047 78
Balance on hand January 1, 1894	29,744 69
	$105,672 17

Here is an appropriation of $105,672 17 for the inefficient fighting of a single pest one year.

The reports of the State Board of Horticulture have devoted much space to descriptions of beneficial insects and their habits, together with the pests upon which they prey, so that I shall not allude extensively to them on this occasion. There is one, however, comparatively new and from the labors of which I hope for good results, to which I would call your attention. This is a very minute ladybird, the *Scymnus nanus*, which has been discovered at work upon the red spider in Los Angeles. During the past summer I examined trees at Rivera that had been badly infested with the red spider, but were entirely cleared by this parasite. If it can be encouraged in its work and distributed over the State I have no doubt that the red spider will soon succumb to its effects and cease to be the dreaded pest it now is.

Another parasite of the black scale is a small noctuid moth, reported from Europe, and described in "Insect Life." It is described by Dr. Rouzand, who made a study of its habits for some years.

I wish to make a few suggestions about collecting and distributing parasites. In the first place I would strongly advise against any one not an expert procuring insects from foreign countries. Our beneficial insects have their parasites, and the great object is to introduce them without their enemies, in order that they may spread without check and do more efficient work. If, however, parasites are introduced with them, their labors may be rendered nugatory, and they be kept from increasing in sufficient numbers to do good work.

We have two classes of parasites. The external—those which eat their prey from the outside—which comprise the ladybird family, etc., and the internal, in which the female lays an egg under the scale, in caterpillars, etc., and the young larva lives within its host. Among the latter we have the Ichneumons, the Chalcids, the Tachinas, and others. Some of these are very minute—almost microscopic—and to distribute them it is necessary to cut off branches of the trees upon which they are at work and place them where desired. Care must be taken in this, however, that new pests are not distributed, and that the insects to be attacked are identical with those introduced. The larger parasites are more easily handled. Some of the Ichneumonidæ and Tachinas can be handled in the larval or pupal state without trouble and transported in an ordinary package.

In handling external parasites the operation is different, and ladybirds going but a short distance are usually sent in the mature or beetle form. For collecting these I have a cloth about four feet square, preferably of a bluish or greenish tint, as less trying on the eyes; this should be of serge, slightly rough, as it holds the insects much better than if it were perfectly smooth. At each of the four corners is a loop of tape into which the stretcher is fitted. The latter is very simple, being two strips of wood one inch by half an inch square, extending diagonally from corner to corner, and fastened with a screw where the two bars cross. At each end is a small shoulder which prevents the tape loops from slipping up. When required for use the cloth is stretched on this frame and fastened at the corners. It is then held under the branches where the ladybirds are, and these branches are lightly beaten with a stick or switch about six feet long. At the least jar the little fellows double up their feet and fall toward the ground, but are caught on the cloth, which sags to the middle; here they are collected. In gathering them up I take a small, clean, square mustard can, which I use for a scoop, and with this place them in boxes to be shipped to their destination. By this method all injurious handling is avoided. A little moist moss is placed in the box, and in this they will remain safe for several days—long enough to reach any point to which they would be ordinarily sent by mail. For long-distance shipment, as to Honolulu or Cape Town, the insects are sent as they are about to enter the pupal state, and placed in a refrigerator on the steamer. They go through the change on the way, and arrive in their perfect condition.

I hope that California, with its characteristic push and enterprise, will keep the lead in this work, and still further demonstrate to the world that nature can be relied upon to keep in check the enemies of the products of mother earth.

EXPERIMENTS WITH ROOT KNOT, AND RESULTS.

By W. EGBERT SMITH, of Napa.

In the fall of the year 1890, I discovered that some of my prune trees, then two years old from the planting, were badly affected with root knot. I made inquiry of neighboring orchardists as to what might be done to prevent or cure the disease, for I was a beginner in tree culture, but my neighbors seemed to know as little as I about root knot; and the only advice I could get was to cut off the knots and thoroughly cut away the affected wood. Acting upon this suggestion, I had the soil removed from two rows (about sixty trees) sufficiently to expose the first large branching roots, and providing myself with a chisel and a half inch gouge, I went to work on the exposed knots, carefully cutting them away and gouging out the diseased wood. I learned a thing or two while at this work. I found, as others have, I presume, that the root knot is attached by quite a small foot stalk, or root-of-the-knot, which extends quite deeply into the stock or root of the tree. This root-of-the-knot, or core as it may be called, can be traced by a discoloration and softening of the woody substance. Owing to this fact it is quite difficult to entirely remove the diseased wood. I found it so, especially when clusters of knots were found—some as large as a man's fist—growing under the base of the main roots, as well as around the principal root stem. This kind of work was not only tedious, but, as I found later, was quite discouraging; because young knots rapidly grew again the next year from the same core. Observing the soft and spongy nature of the knot led me to think that the application of some substance in fluid form might penetrate and kill the diseased wood without injuring the healthy wood. I determined to make some experiments in this line at once.

For these experiments I selected common substances, not with any theory about their particular chemical action, but rather because they would be cheap and easily applied, if successful, and because they were somewhat used by orchardists for other purposes. The chosen list embraced sulphuric acid, carbolic acid, petroleum, coal tar, cupric sulphate, ferric sulphate, sodium chloride, and potassium carbonate. About a dozen of the worst affected trees were selected for treatment, and wooden tags were prepared with the names of each substance to be applied; also, the date of treatment, October 31, 1890, was written on each tag. The acids were each diluted with water one half. The sulphates, chloride, and carbonate were dissolved in water to a saturated solution. The application of these fluids was made by boring into the root knots with a carpenter's brace and three-eighths bit. I aimed to bore to the core of the knot. Then, from small bottles, I poured these holes full of the prepared fluids, attaching the tags to branches at the base of each tree, as the work proceeded. The soil was then thrown back to the tree, and no further special attention was given them until the fall of the next year.

In the fall of 1891 they were examined and some trees found dead—some alive, with the knots alive, also—and some alive with the knots dead. This last named and much desired result had occurred with two trees treated with the saturated solution of cupric sulphate (bluestone) and one tree, the only one, treated with dilute carbolic acid. The result encouraged me to make further tests with each of these two solutions, being well aware that nothing was proved, since "one swallow does not prove it's summer"—and remembering an anecdote of a too hasty old-time doctor, who, having an Irish patient sick with fever, prescribed whisky and the Irishman got well. The doctor then wrote in his note-book, "Whisky cures an Irishman." Later he had a Dutch patient with similar symptoms, and he made the same prescription. The Dutchman died. The doctor then wrote in his note-book, "Whisky cures an Irishman, but kills a Dutchman." Not knowing yet whether it would be "kill or cure" with my medicine, I deemed it wise to treat ten trees only, with the bluestone solution, and five trees only, with the dilute carbolic acid in the fall of 1891. At the end of another year, I found these trees all living, with the knots dried up and dead. A difference, however, was observed between trees treated. Those treated with carbolic acid seemed to have suffered some in vitality and growth, and I noticed that certain roots were killed by the carbolic acid. In cases of bluestone treatment, the trees all appeared vigorous and healthy. I now felt I could safely treat all my trees affected with root knot, with an application of the bluestone solution.

Accordingly, on the 13th day of September, 1892, I set a man to work digging away the soil from all my prune trees on Myrobalan stock; those on peach stock were examined only enough to prove that they were free from root knot. Of five hundred trees on Myrobalan stock, about two hundred were found with root knots. All such were treated with the bluestone solution. Our work was confined to the main root stem, including the forks of the root. We did not attempt to follow the roots in their ramifications after they leave the base of the tree. The principal damage from root knot appears to occur only when the knots approach the crown of the root; when they encircle the crown of the root, the tree is hardly worth saving. Hence, where root knots exist they should be destroyed early, at least before they encompass the root crown. As to the method of the work, I will say, that as fast as the knots were uncovered by the man with the shovel and trowel, I followed with brace and bit, and a large bottle of concentrated solution of bluestone. In the cork of the bottle a quill was fixed to guide the fluid easily into the bored holes. After two days' work this method of treatment was modified. A curious and interesting thing occurred. I noticed that the leaves on certain branches of trees treated the first day had turned very dark, with a sort of coppery tint which was very noticeable. These leaves dried up shortly and fell off, leaving the branches naked, while other branches on the same trees retained their green leaves. Not one tree only, but a score of them were showing this strange effect of the cupric solution. With those dead, copper-hued leaves before my eyes, there was little room for doubting that the cupric fluid had thus quickly entered into the circulation of the tree. It must have done so to produce the effect observed. And it must have gone up at a season when we speak of the sap as going down. I was a little scared at this phenomenon, and modified my treatment by striking off the knots and puncturing the diseased wood, especially the core of the knot, with a sharp-pointed iron, then applying the cupric solution with a swab—in this way avoiding too excessive a quantity of the fluid penetrating the fiber of the tree. However, in the light of future events, there seemed to be no need of this precaution. The trees thus curiously and it would seem seriously affected, were all right in bud, leaf, blossom, and fruit in the spring and summer following. They have shown no sign of injury since, but on the contrary seem to have taken on a healthier tone than the other trees, so that I now believe the treatment by boring is perfectly safe, if done in September or October. I could not vouch for it at other seasons of the year.

After two years not one of the two hundred trees have died. Every tree treated was marked by tying a strip of cotton cloth on a south side branch next to the trunk of the tree. These marks still remain. Only last week I dug away the earth from about twenty of these marked trees, and found *dead* knots only—a specimen of which I brought with me, that members of this convention, interested, might see for themselves. The trees treated for root knot now look as clean and healthy as those not treated—no difference can be seen—they all made a splendid growth last year and no finer trees of the same age can be seen in our section. In the light of these facts, I consider the treatment with bluestone, in the manner herein described, a success. Even if the knots should reappear after three or four years, it would still be profitable to apply this remedy to keep the knot growth in check. The cost of application need not be more than three to five cents a tree, and the bluestone used is so trifling in quantity that it need not be considered in the bill of expense. My treatment of root knot has always been in the fall months of the year. Whether other seasons would do as well, or better, I am not prepared to say.

In using this remedy, my advice is to make the bluestone solution as strong as the water will dissolve.

In applying the solution be sure that it penetrates the core of the root knot.

If the knot is on the main stem of the root, so as to be easily accessible, I would advise to knock it off and puncture the soft core repeatedly with any pointed instrument. Then apply the solution with a swab. Be thorough in having the solution penetrate the diseased wood.

In case the knot is difficult to reach—imbedded between roots, or deep—bore into it with brace and small bit; aim at the core; then fill the hole or holes with the solution from a stoppered bottle with a quill in the stopper. Examine your trees below the surface, if you have reason to suspect root knot. Apply the remedy before the knots have reached the crown of the root and, by encircling the tree at this point, have permanently injured and dwarfed the tree. There comes a time, when if root knots are neglected, that the tree will not be worth saving.

In conclusion, I will state that I have no theory to advance as to the cause, or nature, of this disease. I will simply mention a few facts and conditions, that may help those seeking the cause. My land is deep alluvial on Napa Creek, Napa County. The creek banks show 15 to 20 feet depth without clay or adobe. It is naturally a well-drained, warm soil. My trees affected were all prune trees on Myrobalan roots. I have prune trees on peach roots growing on the same 10 acres. Not one of these has root knot to the best of my knowledge and belief. I have examined whole rows of those on peach root, adjacent to diseased rows on plum root, and found not one of the peach roots affected.

In the matter of cultivation and planting, I have been thorough, but extra careful to not wound the roots with plows and cultivators, or in any other manner. These facts seem at variance with many of the so-called theories as to the cause of root knot.

DISCUSSION ON ROOT KNOT.

Prof. Hussmann: I think this is a very valuable essay, and wish to say a few words in regard to it. The bluestone remedy is now used in the East almost entirely for diseases of the grapevine, by spraying several times after each rain. We all know that the grapevine is affected by what we call the black knot. If this has proven so successful on plum trees, why should it not be successful on grapevines? At least, it is worth trying. I am led to the conclusion by a few experiments that I have made, that the ripe rot in grapes that has troubled us so much for the last few years can also be prevented by spraying with bluestone. My friend, Herman Yeager, with whom I corresponded in regard to the matter, and who was deputized by the Department of Agriculture to try the bluestone remedies, has advised me that since he has applied them frequently, sometimes as often as three or four times during the season when they had frequent rains, he has succeeded in raising good crops from vineyards where he never succeeded in saving any at all during wet seasons from some varieties. These experiments date back as far as six years, when he was first authorized by the Department of Agriculture to try the bluestone. And he says he has become so satisfied of its practicability and of its being a preventive of all the rot which they had on the Eastern grapevine, that he thinks it will prevent mildew in any shape, and also the black rot.

A Member: I would like to ask Mr. Smith if these trees were from the same nursery, and also what stock they were on.

Mr. Smith: The trees were from two different nurseries, and they are on the plum stock. Invariably, in my experience, I have found trouble with the plum stock. I know that my neighbors have root knots on peach root. But in my own experience I have not found them on peach root; only on the plum root. And when a year later I planted two hundred and fifty prune trees on plum root from another nursery, they also were badly affected. They were planted on just the same kind of land. I examined whole rows that were on peach root, and found no knot on them. It is a strange fact, but it is true.

Mr. Wilcox: This matter has been before the State Horticultural Society many times. We have traced this disease where the Myrobalan root has been planted on wet soil. The peach is used in Santa Clara County on heavy, dry lands, and consequently has not become diseased by the moisture. Some of the best prune trees I ever raised are on Myrobalan stock, and I have planted during the last ten years more or less at different times. But where they originated in heavy lands they became diseased. Bluestone has been used forty or fifty years on wheat, so that it would not smut or rust. If it is true that it has that effect on root knot, does it not act mechanically on the sap that circulates through the wood? And I would suggest that we experiment by introducing it into the body of the tree.

Mr. L. C. Frisbie, of Napa: I have experimented in chipping off the knots, and I have found small worms in them. Whether they were the produce of the knot, or whether they were the cause of it, I have not been able to determine. I will also state that a number of trees which I planted in deep sandy soil were slightly affected by root knot. I cut off the knots in planting the trees, and most of them recovered. I also had Winter Nelis trees with root knots on them. And a year ago I found prune trees on peach roots in a nursery, that were nearly every one covered with root knot.

Mr. A. D. Pryal, of Alameda: Seven or eight years ago I had occasion to visit one of our nurseries. The owner was taking up his peach trees, and I found that a great many of them were affected by the root knot. I looked around and I saw that there was a field right adjacent to the nursery, and that there was an herb growing in the field and the herb was full of knots. I took some of those knots and opened them and put them under a microscope, and I found the very same, identical knot that the roots of the peach trees had. That was what caused this root knot in the trees. I examined the blackberry and raspberry and currant roots and found the same disease. And I found a small insect. You can't see it with the naked eye. I notice among us Professor Woodworth of the State University. I think he will bear me out in the statement that the root knot is caused by a worm.

Prof. Woodworth: There are a great many things that are called root knot. The one that is produced by the *Heterodera radicola* is a different one from that most commonly called root knot. It never gets to a large size. The root knot most commonly known is due to some other cause, which is not known. Again, these true root knots, when they become old and dead, and rotten, are attacked by the larvæ of a small fly. I am very much interested in the use of bluestone. I have watched a series of experiments. There is no question that its use in some form is very beneficial. The use of the Bordeaux mixture, however, which is a bluestone and lime mixed, is a severe application. But it can be made perfectly safe as an application to the outside of the tree, and it produces its good results from the same cause—that is, the bluestone that is in it. I have seen trees that were killed by being treated in the spring of the year with bluestone. But there would be no probability that we could ever introduce enough bluestone into the circulation of the tree to kill the knot unless we put it into the knot. If we put it into the knot we may kill the knot and not spread it enough in the tree to injure it, if we do it in the fall, as the paper of Mr. Smith spoke of. I use the bluestone always in the form of the Bordeaux mixture, and in that form I consider it safe.

Mr. Sprague: Mr. A. J. Roberts, of Alameda, assured me that he had discovered his finest prune trees with root knots on them, and that so far he was unable to detect any injurious result, although the presumption was against there being no injurious result.

Mr. President, I have brought with me for examination by this body, a sample of the weed known as the Russian thistle, which is making its appearance in Los Angeles County. It was never seen there before a year ago. It is a very noticeable weed in that dry country, inasmuch as it is a very bright green at a time when most other vegetation is dry. The dangerous character of the weed may be inferred when I tell you that in a very brief time it has depopulated portions of Dakota by its rapid spread. We are told by bulletins from official sources that farmers have been absolutely obliged to abandon their farms. It is an evil of the greatest possible magnitude. It was doubtless introduced into Los Angeles County by cars in transit, perhaps standing for a day or two on the track. Its spread is greatly increased by the fact that when it is dry it forms a stiff, rolling weed, which is blown by the wind and scatters its seeds broadcast until it finds a lodgment. It grows sometimes six feet high. It is rounded like a tumble-weed. When it comes to maturity the winds break it off and blow it along and scatter the seed as it is blown. It is an annual. Nothing can be done with it until it appears in the spring, and then it must be dug up, and the digging must be followed up during the growing season. It is no slight task to eradicate it, because it must be watched all the year through. The flower is very small. Perhaps the most noticeable thing about it is its seed pods, which are cup-shaped, and quite peculiar for a weed of that character.

The Chairman: I would like to ask of Mr. Craw if he has any new pest to report, as having come into the State during the past year.

Mr. Craw: In the past year we have found a pest which threatened to be a very serious one. It has been noticed particularly on peach and plum trees coming from Japan. It is a small white scale, the *Diaspis lanatus.* It has been found in Washington on some seedling peach trees. Experiments have proved that it is most difficult to destroy. Coal-oil emulsion, and lime, salt, and sulphur have been found ineffective. Not more than from 5 to 10 per cent have been destroyed by such experiments. It exists on nearly all kinds of plants, not only deciduous, but nearly every other kind of plant. It is found in the West Indies on ornamental plants, and experiments there have met with a similar failure. In our experiments here we find it succumbs to cyanide of potassium and sulphuric acid as a gas. A great many trees that arrived with it have been destroyed. But there were prior arrivals when we did not know of its very serious character, and they were fumigated and released. Those trees we will have to keep track of and see that the scale does not spread. There was one Florida planter who received quite a number of trees from a California nursery, and the following year they were covered with this scale. He was under the impression that he had received the scale from California on the trees, but afterwards he found the scale eighty miles from where first discovered, in a section where they had received no trees from California. So far as I know, thêre is no nursery in the State where it has been found. I am satisfied that it was introduced there from Jamaica, or from some of those nurseries in the South. There is one nursery in Georgia where the trees were found to be infested. I would caution all the fruit growers of the State to look out for it. I am not aware of its appearance in any of the orchards of the State, however.

Mr. Lelong: Will you tell the convention what experience you have had with the pear aphis?

Mr. Craw: The pear aphis is something new. There is a case reported from Yolo County where the pears are suffering. A gentleman who is the superintendent of an extensive orchard, after an examination, reported it as the woolly aphis, to the State Board. On examination of the roots I found it differed somewhat from the woolly aphis, and it appeared to be a very serious pest, because it destroys the small fibers and gets in under the larger roots in such a manner that it appears to poison them. Experiments were conducted by Mr. Zane, the gentleman I referred to, with gas lime, and also with rosin solution poured around the trees, but neither was particularly effective. One large orchard of Bartlett pears, eight years old, was almost ruined last season by the aphis. I found it about two years ago on imported stock, and I communicated with all the quarantine guardians in the State and instructed them to look out for this pear aphis, and disinfect all imported stock. Since then everything has been attended to, and I don't think we will have any trouble with it. But it would be well for pear growers to make investigation of sickly trees and see if the aphis has not got established.

Last March, I received some pear leaves from a pear grower in Tehama County. On the first inspection I thought they were affected with a fungous growth. I placed them under a microscope, and I found they were very minute mites, so small that hundreds of them were in a single gall. They had the effect of blistering the leaf. Pear growers in different sections have reported this pest, and it is very widely spread, through all the counties of the Sacramento Valley, but in the coast counties, so far, there has none been reported, nor in the southern part of the State. It is comparatively new to the United States. About four years ago was the first notice taken of it in New York State. It spread throughout Canada and I had specimens from Lewiston, Idaho. The gentleman who sent them was Horticultural Commissioner from that section, and he said they had found it about three years ago. The Secretary of the State Board of Horticulture in Oregon asked me to forward him specimens, so they could determine whether they had it in Oregon. He finds it distributed over Oregon. As a remedy, coal-oil emulsion is recommended for spraying in the spring. That is expensive. Experiments in this State tend to show that sulphur is a good remedy, applied the same as for red spiders. I think it is one of our best remedies. Pear growers everywhere, where they find the *Phytoptus*, or blister mite, should dust their trees thoroughly in the spring twice or three times, just as they would for red spider. The pest should not be allowed to spread in the orchard. I think that thorough work, just as soon as the leaves push out, will destroy it so that there will be no trouble.

Mr. Lelong: Also as to stock coming into this State from foreign countries—whether they come here affected by the root knot.

Mr. Craw: We have not found anything very serious coming from the outside, but from the East we frequently find root knot. Those are all taken out and destroyed.

Mr. Pryal: I would like to ask Mr. Craw if he knows whether the codlin moth is disappearing, or not.

Mr. Craw: I think probably there was less this year than some years previous, but it is not disappearing.

A Voice: I would like to ask Mr. Craw what success has been met with in the use of gas lime on pear aphis.

Mr. Craw: Gas lime has appeared to have no effect at all. There were trees that had been so seriously injured they were dug up and the soil was removed and new soil was placed in the holes. Gas lime was mixed in those holes and fresh trees planted. When I visited the orchard about a month ago I found the trees very seriously affected with the aphis. The experiments, however, with the rosin wash were a little more successful. Where they had been thoroughly soaked I found there were very few aphids left, and the trees had made a very good growth. I hardly think that remedy would be practical for larger orchards or for older trees, still, experiments could be conducted with it. It would be quite expensive to irrigate with insecticides. The pear aphis is a very serious pest, but it does not appear to injure the roots like the woolly aphis on the apple. It does not produce any swelling. It only appears to poison the roots and destroy the young fibers.

Mr. Kimball: I would like to ask Mr. Craw how extensive has been the distribution of the *Rhizobius* and *Vedalia*.

Mr. Craw: The *Rhizobius* was distributed about a year ago. There were nearly five hundred colonies sent out at that time to different parts of the State. Last June there was another distribution and a great many colonies were collected, but it was during the strike. The colonies for the northern part of the State had to be distributed south. Another distribution was made in September. These were sent all over the State. Altogether there has been over a million beetles sent out from Mr. Cooper's ranch during the past six months. The effects in Mr. Cooper's ranch are more noticeable than in any other section, because they have been longer there. There were something like ten pairs placed there in May, 1892. These bred until they had spread all over Mr. Cooper's orchard, and I believe you can hardly find a single bug in his orchard to-day. The trees are recovering. They are clean and healthy, and the orchards which were first cleaned are now full of fruit. They spread from Mr. Cooper's orchard to adjoining orchards, and they cleaned those out also. The trees are in better shape than ever before. I am sorry, however, to report that there is a small parasite which has attacked the larvæ of ladybirds in Los Angeles County. The first that came into my possession were sent by Mr. Scott, the Los Angeles Horticultural Commissioner. I placed them in a breeding-box and hatched out the parasite. It is entirely new to the State. These may limit to a certain extent the value of the ladybird as a scale destroyer. Care will be taken not to distribute any ladybirds from the district which is affected by that parasite.

Mr. Muscott: I would ask Mr. Craw if any remedy has been found for the root fungus.

Mr. Craw: I don't know of any. The trouble appears to be all over the State to some extent.

Mr. Muscott: I would like to inquire of Mr. Craw whether the parasite which he thinks is appearing upon the larvæ of the ladybird is doing the same work in Santa Barbara and other coast counties.

Mr. Craw: We have not found those parasites in the larvæ of the ladybird in California. The larvæ that Mr. Scott sent to me was the first instance that I have known, and I have studied the ladybirds in the State for eighteen or twenty years.

Mr. Muscott: I would like to inquire further, whether Mr. Craw considers that under dissimilar climatic conditions the *Rhizobius* would be equally successful. For instance, in Santa Barbara County, where it is cooler and more moist, I understand that they are doing very well, but in the interior and the warmer localities, like San Bernardino County, I understand that they have so far been a failure.

Mr. Craw: I do not believe that there is anything in the conditions of climate in the interior counties that should act against the spread of the *Rhizobius*. Ladybirds are doing good work in those sections, and I have no reason to doubt but they will be equally effective in other sections as soon as used.

Mr. Muscott: Can you explain the reason of the rapid disappearance of the *Rhizobius* which you placed in our section? Careful examination fails to disclose the presence of a single *Rhizobius*.

Mr. Craw: Well, San Bernardino is an extensive county. In the western portion of the county there are thousands of acres of orchards, and four or five years ago nearly every orchard was entirely free from black scale. Now nearly every orchard is infected very seriously. If you turn a colony of beetles into that district it is a very difficult matter to find any of them a few days afterwards.

Mr. Muscott: I would say that I obtained a colony from Mr. Cooper a year ago last July and placed them on olive trees, and I made a very careful examination, using the test which you have spoken of, but was unable to find *Rhizobius*. And that is nearly a year and a half ago.

Mr. Craw: Those colonies have averaged about three dozen beetles, and I don't know the reason, but there were a great many failures. I don't think that any of the native birds have destroyed the beetles or the larvæ.

[Mr. Stephens in the chair.]

Mr. Buck: There has been some desire expressed by some members of the convention that facts and data be given to the Committee on Transportation in regard to points that are remote from terminal stations.

REPORT OF COMMITTEE.

To the Chairman and Members of the Fruit Growers' Convention:

Your committee, appointed by resolution at the convention held at Los Angeles, November, 1893, make the following report:

In view of the great destruction caused by the ravages of insect pests and fungoid diseases upon fruits and fruit trees, prevalent in nearly every fruit-growing district in the State; and with the knowledge that neither by spraying nor fumigation can we cope with the spread of these enemies, and that our hope rests in the aid of natural enemies which do exist in the native homes of said insect pests and fungoid diseases, we recommend that the convention adopt our report and pray the Legislature at its coming session to grant an appropriation of not less than $5,000 each year—say $10,000—to be placed at the disposal of the State Board of Horticulture, for the purpose of sending to foreign countries a competent entomologist to search for such natural enemies as will prey upon the insects and fungoids that now exist or that may be introduced into the State to the detriment of our fruit interests.

We urgently recommend the above for the following reasons:

First—No question so deeply concerns the prosperity of fruit growers as the aid of parasites to keep in check these destructive enemies, and being in their interest, should be under their control.

Second—The State Board of Horticulture having been created by the fruit growers, and being under their control, is the proper party to pursue this investigation.

Third—As a matter of economy, said Board being organized, having a central office and competent officers, is ready to take up this work without any additional expense, excepting that of the employment of an entomologist and his traveling expenses.

Fourth—The State Board and its officers having had the experience, and having been so successful in the discovery, colonization, and distribution of valuable parasites, collected by Albert Koebele on his second voyage to Australia, thereby saving vast sums of money to the fruit growers, your committee feel that without any other reason they are preëminently qualified to pursue the investigation.

Respectfully submitted.

ELLWOOD COOPER,
ABBOT KINNEY,
S. F. LEIB,
N. P. CHIPMAN,
Committee on Insect Pests and Parasites.

The report of the committee was, on motion, adopted.

Recess until 1:30 o'clock p. m.

AFTERNOON SESSION.

[R. D. Stephens in the chair.]

STATISTICS.

C. M. Coglan, Secretary State Board of Equalization: The Board receives very few reports which gives them any idea of the number of trees of different varieties raised in the different counties. Incomplete reports are of no use. From some of the best fruit-growing counties no reports that are of any value are received. The reports of the Board are printed and sent out all over the country and placed in different libraries, where they are read by those who wish to get information concerning the industry in this State. The Board considers it a very important matter to collect such information, which can be collected only through the Assessors. I think this convention ought to consider this question, for it is a very important one.

RESOLUTION.

Mr. Hutchings, of Yuba, offered the following resolution, which was referred to the Committee on Resolutions:

Resolved, That this convention extends its hearty sympathy to the residents of the valley who have for years been fighting against the devastation wrought by the hydraulic monitor, where farms and orchards have been destroyed and covered up, the navigability of our rivers has been injured, cities and towns put to enormous expense in building levees for their protection, and that we view with alarm the efforts that are being put forth to rehabilitate hydraulic mining to the detriment of farming interests.

Resolved, That we protest against the State appropriating money for the building of dams in torrential streams for the benefit of private enterprise.

PRUNING, CULTIVATING, FERTILIZING, AND IRRIGATING.

Mr. Gray, of Butte: I understand that there are some orchardists in Santa Clara County who have not plowed for some years, but do all their cultivating with cultivators. I would like to know what the result has been after two or three years' trial.

Mr. Righter: We almost invariably cultivate. We hardly ever do anything else, except when there is a big crop of weeds and we have to turn them under. We are cultivating all the time now. The object in cultivating now is to catch all the moisture. The ground holds the moisture better where it is loose on the surface.

Mr. Gray: How deep do you cultivate?

Mr. Righter: That depends on how each fellow thinks. We cultivate all sorts of ways. Some say two or three inches; others say six inches.

A Voice: What is the best tool for cultivating when you do not plow?

Mr. Righter: That I cannot tell you. I think they generally use what they call a chisel-toothed cultivator. But there are a great variety of cultivators used. There are many disk harrows used. I believe the general impression is that the disk harrow is the best. In regard to irrigation, I believe it will pay to irrigate. Some seasons there is ample rain; others there is not. In order to provide against a calamity we had better be ready with an irrigating plant. One of my neighbors put in a large irrigation plant and irrigated several hundred acres. He put all the water on his land that he wanted to. And I never saw trees look so well. The time to irrigate is after the fruit is off. Then there should be a good irrigation just when the rains are stopping. Then the trees will take care of themselves in good shape and mature their fruit and be ready for another year. I think the question in regard to irrigation is not: Can you raise fruit without irrigation? but, Can you raise enough more fruit by irrigation to more than pay the cost of irrigation?

A VOICE: How did it affect the size of the fruit? Did it increase the size of the fruit?

MR. RIGHTER: Yes, sir; and more than that, it increased the quality. I know one man who irrigated late in the season, and he had better fruit and it shrunk less than that of anybody else in the neighborhood. We took some of that fruit that was irrigated along in the spring and some that was irrigated in the summer and sent it up to the University at Berkeley for analysis, and it showed that there was about as much saccharine matter in those prunes that were irrigated late as in the others. They were larger and they were better.

A VOICE: Did it not make your fruit later in ripening?

MR. RIGHTER: Yes, I think it did. And that is the reason it was better.

MR. NORTHRUP, of Amador: I am a large peach grower. I keep the water running through my orchard all the time. There is not a day in the week that we don't irrigate. Instead of raising a couple of hundred small peaches I raise a hundred big ones. The result is that I sell my fruit for a big price. While my neighbors who do not irrigate get 25 cents a box, I get 65 cents. Irrigation is the life of fruit in our county. If we can't get water we can't grow trees. But I want to state in connection with it that we prune. We never cease to prune every year, and prune thoroughly, bearing in mind always that all good peaches grow on new wood, and that an unthrifty tree never produces new wood; consequently we aim, by pruning thoroughly, and then by irrigating, to keep our trees thrifty. In that way we make a success. Wherever that plan is followed in our county I never have known a failure.

MR. WALTON: I would like to ask what it costs a ton to produce peaches in that way?

MR. NORTHRUP: I can tell you a little something about it. When once we get our water ditches fixed we can apply most of our water by gravitation, although we use an engine to convey a good deal of our water, and that makes it a little more expensive. But I find it pays to go to any expense, because the price corresponds to the expense. I could not give you the figures for it, but the difference is very little. Of course we cultivate thoroughly. We plow it well twice. We cultivate three or four times and keep the moisture as near the surface as possible. As soon as the moisture begins to fall, then we apply the water, and if the weather is very hot, we keep it running, twice a week at any rate, and continuously on the gravelly and sandy spots. We never turn the water off. We turn a very small stream on and keep it going. And the result is that from six- and seven-year-old trees this year we picked all the way from twelve to twenty boxes of fine peaches, averaging forty-eight peaches to the box, regulation size, and weighing on an average twenty-six pounds to the box. We have many that weigh a pound. We raised Heath Clings that weighed nineteen ounces, this year, and our Salways would average half a pound and more. Forty-eight peaches would make a box weighing twenty-six pounds. So you see it was not such very small fruit, taking a six-inch box to hold two tiers.

Mr. Walton: What I want to know is whether you can raise peaches for half a cent a pound by that plan.

Mr. Northrup: I don't know. We never have had to sell them for that. The big ones are the ones that sell. The little ones are the ones that break the market down. And there is where the trouble comes. If you will irrigate well, prune well, cultivate well, and thin out to prevent overloading you will find that it will help you out.

Mr. Block: Would you kindly tell us if you think this extra irrigation does not leach out your land?

Mr. Northrup: No, sir; on the contrary the water is filled with slickens, which is carried down along the ditches, and the slickens raise a vast amount of vegetation, and the ditches become filled with weeds, and we turn a big furrow and turn the weeds under. That tends to enrich the ground. And then in the new ditches the weeds spring up again and we turn them under again.

Mr. Block: Do you find that the increased size of your product is accompanied with any deterioration in flavor?

Mr. Northrup: Not in the least. Our commission merchants in San Francisco say it is a pleasure to them to handle our fruit, because it is extra in quality and in size both. It has flavor, it has color, it has size.

A Voice: I come from a slickens country, and our experience in regard to slickens is the reverse. We consider it is poison to the land.

Mr. Northrup: Wherever we have slickens on our land the weeds grow up spontaneously, and when we turn them under that improves the land.

A Voice: How far did you have to go for water in your wells?

Mr. Northrup: All the way from twenty to thirty feet. But when we pump we pump directly from the river or ditch. We use a centrifugal pump. I have heard it said that we would have to turn our wheat fields into fruit. This will not do. Good fruit cannot be raised on ordinary wheat land without irrigation.

A Voice: I have an orchard on wheat land. I have raised Orange Cling peaches, and on five hundred trees I did not have five boxes that went under two and a half inches in diameter. And they went from that up to three and a half. And I may say further that the entire county of Sutter raises its orchards on wheat land, and does not have any water to irrigate. But they cultivate thoroughly.

A Voice: I think that there is a misconception here. I think the gentleman alludes to the wheat lands in the foothills and not in the valleys. I have raised peaches that would weigh a pound and a quarter on wheat land.

Mr. Northrup: When I referred to wheat land I did not mean bottom land along rivers. But I do not think there is a single orchard between here and Lodi that has ever made a success in raising fruit. When you strike the bottom land of the Cosumnes, or of the Mokelumne, or of the Sacramento River, there you will make a success; but come right up here within two or three miles of Sacramento and I will show you trees seven or eight years old that are not four inches through. The gentleman who says he raises peaches on wheat land without irrigation has exceptional fruit land. He has got water close by. But take the fruit from Sacramento to Lodi and you will find that my statement is correct.

AMERICAN POMOLOGICAL SOCIETY.

MR. LELONG read a telegram from G. C. Brackett, of Kansas City, stating that the Pomological Society would meet at Sacramento.

WHEAT AND FRUIT GROWING IN CALIFORNIA.

By GEN. N. P. CHIPMAN, of Red Bluff.

Mr. President, Ladies and Gentlemen: For the third time I have been asked by the State Board of Horticulture to submit some observations upon the relative importance of wheat and fruit in the agriculture of California.

Six years ago, at your annual meeting in Chico, I ventured to warn the farmers of this State against the persistent planting of wheat as the chief agricultural product of California, and to invite them to consider the importance of fruit growing; or, if they had no faith in fruit, then to adopt a system of diversifying their crops so as to avoid what seemed to me the early collapse of grain farming as a source of profit.

Again at San José, in 1892, I still further elaborated the argument, having in the meantime gathered the statistics and experience of the succeeding four years. What had been conjecture and prophecy in 1888 took on the form of actuality in 1892, and now in 1894 no man seems able to forecast the doom of wheat as a product of the farm.

The price has been steadily declining since 1886, and rapidly since 1890, until wheat sold in Liverpool in October at a figure lower than it has been known for two hundred years.

In 1888 I assumed that there was debatable ground for wheat, and my purpose was not so much to discourage its growth as to point out to reluctant farmers the future of fruit growing in this State, and encourage the breaking up of the great grain ranches and the planting of more fruit trees. As far as California is concerned, the action entitled "Wheat versus Fruit" has been tried, and has been won by the defendant. An appeal has been taken, and the judgment has been affirmed and a rehearing denied. The question is *res adjudicata.*

The question is no longer whether we should plant wheat or fruit. The question is, What shall the wheat grower do to be saved?

When we took up the gage of battle the wheat grower told us that if we would keep on planting trees we would soon be feeding our fruits to the swine. It looks now as if the prediction as to fruit is to recoil on wheat, and that wheat, and not fruit, is to go to help supply our meat market.

I do not see how I can greatly strengthen the argument addressed to you on former occasions. A review convinces me that the reasons advanced for the planting of less wheat in California for foreign markets still hold good, and have been greatly emphasized in the past two years.

Between the fruit grower and the wheat grower there can be no jealous rivalry. We are not encroaching perceptibly upon the wheat area of the State. We can produce all the fruit required for consumption in this country without considerably diminishing the wheat acreage. Indeed, the law that demands diversity of crops precludes the idea of having all fruit and no wheat or barley or hay. France with her rich acres of vines and fruits and her wonderfully diversified products, grows over 300,000,000 bushels of wheat some years; in 1894 the yield was 343,345,391 bushels—an average of twenty bushels to the acre. And this is more than three fifths as much as the entire crop of the United States for 1892, and more than four fifths the crop for 1893.

What we should all do now as patriots, as good citizens, is to find some way to make profitable all the products of our wonderful soil and climate, and to stand firm for the supremacy of agriculture in all its forms in our beloved California. Let us not reproach each other nor try to build up one industry by pulling down another. No one builds wisely who builds upon the ruins of his neighbor.

What is the situation of wheat and fruit growing in California? The answer as to wheat involves to some extent an examination of the world's market. As to fruit the answer relates chiefly to the home market.

At a recent meeting of the State Board of Trade the future of wheat growing was made the subject of special discussion. Hon. Horace Davis, one of our best informed citizens, addressed the meeting by invitation. During the Midwinter Fair I heard him deliver a very interesting discourse before one of the congresses on this same subject. He seems to think that over-production has had much to do with depressed prices, and he saw but little encouragement for the California wheat grower. Being asked whether the fall in the value of silver had not affected prices, he replied that the wheat grower in silver countries was getting the same for his wheat now as thirty years ago, and that silver had not changed in value in those countries. He said, however, as I understood him, that the purchaser sold the wheat for gold and bought silver at a heavy discount with which to buy more wheat, and that this gave the Indian wheat grower a competitive advantage.

The United States Senate at its last session undertook, by a committee, to inquire into the causes of the depression in agricultural products. The report of the committee is very elaborate and exhaustive. As to wheat, the report shows that the low price cannot be referred to over-production.

Upon this point some statistics will be helpful and interesting. In our own country the quantity grown does not necessarily affect prices. We produced the largest crop, by about 25 per cent, in 1891, ever known in the United States, but it brought a better price than a much smaller crop the year before, or since. In 1892, our crop was nearly 1,000,000 bushels less than in 1891, and in 1893 the crop was more than 2,000,000 bushels less than in 1891, but prices were lower in 1892, and still lower in 1893.

In 1884, we raised 25 per cent more wheat than in 1893, and about the same as in 1892, but we got 30 per cent higher price for a 25 per cent larger crop, and yet we had added 8,000,000 people to our population.

Looking over the globe what do we find? The annual average wheat production of the world for the nine years commencing in 1884 has been 2,192,138,500 bushels.

But the table submitted by the Senate committee shows that the product of 1884 was nearly 100,000,000 bushels more than this average, and was 36,209,000 bushels larger than the crop of 1892, and although the population of the wheat-using countries had greatly increased in the interval, the export price in 1884 was more than in 1892. A comparison is made between the first five years of the decade and the last four years with like result, and the conclusion is reached that the theory of over-production does not account for the decline in the price of American wheat. The fact is, there has been a decline in the value of almost all agricultural products.

A table of prices of cereals in the United States from 1868 to 1892 shows an average decline for the whole period, of wheat 35 per cent, corn 32 per cent, rye 32 per cent, oats 30 per cent, barley 40 per cent, or a general average of 35 per cent.

Live stock have declined nearly as much.

As to the effect of demonetizing silver, the Senate report shows that while the speculator makes 33⅓ per cent in exchanging his gold, paid him for his India wheat sold in Liverpool, for silver with which to buy more wheat in India, still it is wheat that competes with wheat, and not wheat with silver; and it is this competition of wheat with wheat that hurts. Nevertheless, the report shows quite clearly that silver demonetization has seriously affected all agricultural products. The argument is too abstruse and prolix for this paper.

An agricultural product that has no export market is necessarily depressed by over-production. While the home market is always the best when consumption and production are equalized, the same law governs in both the home and foreign markets, and the law is simply the law of competition.

It is this competition, which we have to meet, and not over-production, that has depressed prices. Can we in California meet the competition?

The average annual demand for wheat in the "world's market," or the requisites of the nations that buy, is something less than 10 per cent of the total production, or about 203,000,000 bushels, including wheat flour.

Practically all the States of Europe, except the United Kingdom of Great Britain, France occasionally, and Belguim, are supplied by themselves. A very large proportion of our wheat exports goes to Great Britain, and more than a dozen wheat-producing countries compete with us for that market.

A notable feature of our wheat exportations from the United States is the fluctuations in different years. I have examined a table prepared by the Treasury Department, and found in the Statistical Abstract for 1893, of exports to all countries from the United States since 1870.

Omitting less than 100,000 bushels in my figures, we exported of wheat and wheat flour reduced to wheat:

In 1889	92,000,000 bushels.
In 1890	115,000,000 bushels.
In 1891	111,000,000 bushels.
In 1892	233,000,000 bushels.
In 1893	200,000,000 bushels.

European countries took of this in 1893:

Wheat	111,000,000 bushels.
Wheat flour	59,000,000 in bushels of wheat.
Total	170,000,000 bushels, or

about 85 per cent of all exports. The balance went to British North America, Mexico, the West Indies, South America, Asia, and Oceanica.

Of the 170,000,000 bushels that went to Europe, the United Kingdom took 124,000,000 bushels, or about 73 per cent.

The export trade in flour is quite large and seems to be increasing, but this does not help the farmer, who must sell to the mills at Liverpool prices, less all the cost of shipping there. And here we have another illustration of the absurdity, which I will notice later on, of fixing the home price by the Liverpool market.

The mills pay here for wheat made into flour for the China trade the same as that for the European trade, although the competition in China is greatly in our favor. This is shown by the fact that the United States shipped in 1893 to Asia only 42 bushels of wheat and 631,579 barrels of flour.

In other words, India makes the price of wheat in California, although India wheat made into flour cannot compete with California wheat made into flour for the Asiatic trade. The mills may profit by the China trade, while the California farmer may lose.

I submit a table of exports from the United States to all countries, in groups of wheat and wheat flour for 1893.

Exports of Wheat and Wheat Flour, 1893.

Europe.		West Indies. Central America.		South America.	
Wheat, Bushels.	Flour, Barrels.	Wheat, Bushels.	Flour, Barrels.	Wheat, Bushels.	Flour, Barrels.
111,035,242	11,905,158	13,749	1,723,322	73,741	1,366,557
British North American Possessions.		Mexico.		Central America.	
Wheat, Bushels.	Flour, Barrels.	Wheat, Bushels.	Flour, Barrels.	Wheat, Bushels.	Flour, Barrels.
5,544,365	625,927	10,807	51,032	51,639	225,493
Asia.		Oceanica.		All Other Countries.	
Wheat, Bushels.	Flour, Barrels.	Wheat, Bushels.	Flour, Barrels.	Wheat, Bushels.	Flour, Barrels.
42	631,579	16,008	63,251	375,516	28,020

Totals.

Wheat	117,121,109 bushels.
Flour	16,620,339 barrels.

You will see that 70 per cent of our wheat exports is flour. But the wheat sold to the mills brings a price regulated by the Liverpool market and the farmer gains nothing by this comparatively new trade.

In 1880 we supplied 69.13 per cent of the world's deficiency or market requirements. In 1888 it ran down to 19.90 per cent, and since that time we have supplied about 35 per cent. These percentages exclude flour.

India is a strong competitor. Naturally Great Britain being a large purchaser has stimulated wheat growing in India, for India is one of her dependencies. Improved implements have been introduced; highways have been opened, railroads built, and facilities for handling and harvesting and shipping greatly increased. The Suez Canal has revolutionized transportation and cheapened its cost 50 per cent. Wages in India are about 10 cents a day for farm hands. Wheat costs about 13 cents a bushel on the farm; 12½ cents more puts it aboard ship, and 25 cents places it at Liverpool or London. Thus 50 cents a bushel is the cost of India wheat delivered at the center of the world's market to compete with American wheat, the cost of which on the American farm is 50 to 60 cents per bushel. The India wheat is inferior to American wheat, but it competes nevertheless.

It may interest some of you to know, and it is an important factor in the law of competition, that the wheat harvest is going on every day somewhere on the globe. The harvest begins in January in Australia, Argentina, and Chile; in East India and Upper Egypt in February and March; Asia Minor, Cuba, India, Lower Egypt, Mexico, Peru, and Syria in April; Algeria, Central Asia, China, Florida, Japan, Morocco, and Texas in May; most of the Southern States, our own, Oregon, Colorado, Greece, Italy, south of France, Spain, and Turkey in June; Austro-Hungary, Bulgaria, Germany, France, our Middle States, Roumania, south of Russia, south of England, and Upper Canada in July; Belgium, Colombia, Denmark, Great Britain, Holland, Lower Canada, Manitoba, and Poland in August; Norway, north of Russia, Scotland, and Sweden in September and October; Peru and South Africa in November; Burmah in December. The sickle is running daily somewhere on the globe, and wheat is afloat or on the rail seeking markets constantly.

Our Consul-General at St. Petersburg in a recent report called attention to the probable effect of the Siberian railroad, when completed, upon the grain market. There is a famous belt of fertile land lying along the line of the road. The completion of this road will greatly stimulate production by furnishing an outlet hitherto unopened. This officer says: "It is evident that the unavoidable competition of Siberian grain must still further depress the low prices now prevailing in the markets of European Russia, and that it must exert an appreciable influence upon the markets of the world." Our Department of Agriculture has expressed a similar opinion.

In a recent number, the "Sacramento Record-Union" said that "all the wheat-growing areas have been exploited and are practically under cultivation."

I showed from undoubted statistics in 1892, that this contention could not be true. The Department of Agriculture, by its Statistician, pointed out in 1891 how we could in this country easily double our output when the necessity arose. I showed that in Kansas, for example, the wheat area of 1,600,000 acres in 1889, was increased in two years to 3,500,000 acres.

There are large wheat areas in Russia and in the Southern Hemisphere that are as yet by no means exploited. The wheat areas of Argentina, still virgin soil, are represented to be enormous. Providence seems to have made it possible to grow wheat wherever civilized man may reside. In the cold and icy regions of the north; in all temperate zones, and in the sands and heat of India and South America wherever civilized man may go, he may plow, and sow, and reap wheat.

And after all is said, the depressing fact remains that the market for export wheat from any country is extremely circumscribed. The wheat-growing countries are contending chiefly for the limited market of Great Britain for the fluctuating surplus they may happen to have. Nearly all the wheat-growing countries of the globe produce enough for home consumption, and this must always limit the export market. With this limited market and with quick transportation to move any surplus to this one center of consumption, it is easy to see how soon the market may be depressed by over-supply or held down by sharp competition. It is entirely unlike the case of meat products—for example, pork—that may be diverted to many markets; or of cotton, that is circumscribed by conditions found in but few countries; or of tea, and coffee, and tobacco, and rice, and many articles that may be named.

The export of cheap raw food products to great distances never added wealth to any country, and never can. Commerce is out of joint when any civilized people anywhere on the globe can profitably send 15,000 miles for breadstuffs. There is an artificial inequality somewhere that must adjust itself when such a thing is possible. Great canals, great steamships, and great railroad systems are rapidly equalizing the cost of transportation. The immense reserves that were formerly carried over have disappeared and are no longer necessary. Food products follow the law of other merchandise, and only move when and where wanted. The retail merchant no longer buys a stock of goods for a year or half year; he buys from day to day, and does not even go to the centers of trade to make his purchases. Largely so is it now with wheat. Liverpool can reach out in many directions with certainty for England's required supply

Increased transportation facilities have, in my judgment, done more to make low prices for wheat than all other influences combined. And wheat will follow the law of competition, and take a value measured largely by the cost of labor where produced.

If wheat areas exist where cheap labor exists, and I think it demonstrable that they are coexistent, sufficient to supply the world's deficiency or demand, then all export wheat must meet the competition of this cheap labor or not enter the market.

Furthermore, to cheap labor are being added modern appliances for cultivating and for harvesting, and this will still further handicap the well-paid labor of America.

East of the Rocky Mountains in the United States the farmer's surplus is about 20 per cent of the total product, and this in a few States. His home market takes about 80 per cent. The farmers may easily change to some other product and grow 20 per cent less wheat.

With us it is different. We export about 40 per cent—Mr. Davis says 50 per cent—from the Pacific Coast, and it follows that we cannot afford to ship this large percentage at a loss, especially as the price for the remaining 50 or 60 per cent is fixed by the price we get for the remainder.

I know nothing in all the realm of trade and commerce so illogical as that the wheat grower in India who works for 10 cents a day should fix the price of a sack of flour in Sacramento. Yes; there is one exception, and that is, that he should fix the price in Duluth or Omaha or Chicago, where the farmer has a home market in America, for 80 per cent. He had better dump the 20 per cent in the river or the lake, or, what is better, feed it to swine, or, what perhaps is still better, not raise the 20 per cent surplus, than to have an Indian on the Ganges fix the price for four fifths of his crop. Suppose the Eastern farmer should resolve to raise 20 per cent less wheat, or refuse to export any more wheat at Liverpool prices, less the cost of getting it there. What would happen? The farmer could name the price of his wheat for the home market.

Suppose the Pacific Coast farmer should resolve to raise only enough wheat for the home market, or should feed his surplus. Is it not plain that his wheat, like his hay and other products having no export value, would bring his own price, subject only to home competition? Would it not be better to sell 50 per cent of his wheat at a fair profit than 100 per cent at no profit? Why do not our farmers learn wisdom from the manufacturer? Is it not as illogical and absurd to let Liverpool make our home price for wheat as to make our home price for a plow, or an engine, or a harvester, or a suit of clothes?

Suppose we fruit growers should exploit foreign markets for our green and dried fruits, and should succeed in selling 10 per cent of our product abroad, are we then to let the foreign market make the price in our home market for the remaining 90 per cent? We had better never go abroad with fruit than submit to such a rule.

I am a profound believer in the value of the American market for American products.

I cannot see, and never could see, why we have a different law in force as to the home price for wheat from almost every other export product. We export many articles. Our trade abroad used to exceed our imports in value. After 1896 I hope they will again. But where would we be as a wealth-producing nation if our domestic trade of all commodities were regulated by our export trade in the like commodities? The whole philosophy of protective legislation is grounded on the idea of securing the best home market attainable. But this protection would avail us nothing if we could not have a better home market than foreign market.

Perhaps no agricultural problem at this moment is demanding greater attention than that we are discussing. It has heretofore been rather sacrilegious to suggest other uses for wheat than for human food. Indeed, its value has precluded such necessity. We have become accustomed to see corn used for fuel, but to make hog feed of wheat shocked the ordinary bucolic mind. But to this base use our wheat has come at last.

I find in the "Rural Press" for October 27th, an extract from a recent report of the Kansas State Board of Agriculture, in which it is shown that in 1893 that State fed about 16 per cent of its entire wheat crop to stock, and in 1894 it will be 30 per cent, or 8,500,000 bushels. Over four hundred practical farmers reported on the subject, and from fifty different counties. The result is interesting and instructive. Compared with corn, the testimony showed that wheat was superior to corn by 7 to 35 per cent. It was shown that from ten to twenty pounds of live pork could be expected from a bushel of wheat fed. The conclusions reached were:

That it is superior, pound for pound, to corn as a grain to produce healthful, well-balanced growth in young animals;

Mixed with corn or bran it is superior to either alone for work horses;

Fed to cows it is an exceptional milk producer, and much superior to corn;

For swine of all ages it gives generous returns;

For cattle it has high value, at least for part of their grain ration;

For fowls it is superior to all other grains and is the maximum egg producer.

In my own county one farmer is feeding his entire crop of 10,000 bags to swine.

May we not find in some of these experiences a solution of the question what to do with our surplus wheat? And in this connection it may be suggested as probable that better results would be attained in our climate with the same quantity than in the colder climates of the West.

We import from other States food products of value half as great as that of all our wheat exports.

Governor Markham is responsible for the statement that we import of—

Live stock	40,000 tons.
Meats and packing-house products	20,000 tons.
Poultry	1,000 tons.
Butter	2,000 tons.
Cheese	1,800 tons.
Eggs	3,500 tons.

Besides many other products I will not here enumerate.

We are eating the wheat-fed pork and chickens of Kansas every day, and sending our wheat 15,000 miles for market at an actual loss to the grower. This should cease.

I cannot now stop to suggest how to diversify our products. It is easy to say we must diversify. It only takes a few words to do that. But the wheat grower who has his plant for that kind of farming only, finds it difficult to change. And yet he is getting more and more in debt, and more and more difficult is it becoming to enter upon a new agriculture.

Single cropping, whether of wheat, corn, prunes, or any other product, is false farming. The orchardist diversifies when he plants some small fruits, some apricots, peaches, pears, cherries, prunes, almonds. Simply expressed, he has not all his eggs in one basket. The grain farmer diversifies when he raises some hay, oats, barley, wheat, vegetables, fruit, hogs, sheep, cattle, poultry, alfalfa. I should call it a species of diversification also for the average California farmer if he would spend his spare days repairing harness and implements and fences, and helping to make his house more comfortable for his over-worked wife, and give less time to the town and the vulgar game of ten-cent pedro. On every farm there is waste enough, if utilized, to pay the family grocery bill. Sheep and hogs can gather much of this waste. I have found it profitable to pasture my orchards in the winter. The alfileria grows abundantly, and many grasses come up with the early rains. I have found no harm to trees with horses and cows and swine among them until I begin to plow in the spring. I believe swine are a positive benefit.

A very sensible article the other day, entitled "The Business Hen in the Orchard," attracted my attention. There are small possibilities in this direction. I propose to establish several colonies to help me keep down pests and utilize the waste and supplement receipts of the farm.

With all our boasted prestige as a wheat-growing State, we raised in 1893 in value of hay, $3,898,216 more than of wheat, and on 938,569 acres less land. The exact figures are worth stating.

Hay.			Wheat.		
Acreage.	Tons.	Home Value.	Acreage.	Bushels.	Home Value.
1,681,921	2,842,446	$22,370,050	2,620,490	34,852,517	$18,471,834

There is an almost insuperable obstruction in this country to anything like a universal change in agriculture. Conditions exist unfavorable to coöperation or general agreement. It would take a long time, if it were possible, to bring the farmers of the East and West—three thousand miles apart—into any common compact.

It is related of the farmers of Denmark that many years ago they found wheat growing unprofitable, and that gradually they were being involved in debt. Wheat growing had been the main stay, but this had failed, and something had to be done. The Danish farmers turned their attention to dairy products—principally butter for the London market. Coöperative creameries were built, and in a few years these same distressed farmers had money to lend. The farmers of New York and Ohio tried dairying with success, but they were accessible to large markets. To what extent our farmers of California might shift to dairying I will not say. But one thing is sure. We could at least supply the 4,000,000 pounds of butter that we now import; and that would mean a million dollars. And we might supply the 3,600,000 pounds of cheese we now import; and that would mean a half million dollars more.

The dairy interests of the United States are startlingly enormous. The capital invested is twenty-five times that of all the bank capital of this country. The quantity of milk produced would make a creek flowing 1,500 miner's inches throughout the year, or 15,000 gallons a minute.

The value of our dairy products is more than that of all our wheat and nearly as much as our corn. I venture to suggest to our farmers that they examine into the dairy interests, at least as a by-product to help fill out the annual income of the farm.

This country became very sick in November, 1892. It had alarming symptoms in March, 1893, and has been steadily growing worse ever since. I think the crisis was reached November 6, 1894. But the disease is deep-seated. We shall not come out of it suddenly. Even the convalescence, when that happy period comes, will be long. I counsel farmers, fruit growers, and indeed everybody, to maintain the regimen of close economies and most prudent business management.

The California farmer is proverbially wanting in the elementary principles that have made the Eastern farmer strong and self-reliant. I have often seen him come to town and buy fresh meat, bacon, eggs, butter, vegetables, melons, fruit, and the Lord knows what else, and go home cursing the hard times, when he was himself the sole architect of the misfortune of which he complained.

The farmer in California is a reproach to his noble profession who does not raise all the meat, chickens, eggs, milk, butter, fruits, and vegetables required for the family and farm hands, besides some for market. He should raise all his seed and feed. He should do most of his repairs of implements, and generally he should buy less and sell more. He should utilize in some profitable way all his land, and should cultivate less acres and do it better. Raw products that yield no profit must be converted into other forms that will give profit. The climate and soil with and without irrigation in this State offer every inducement to the intelligent, industrious farmer.

I can see no reason why the old soils of France, that were cropped before Columbus discovered America, should yield 20 bushels to the acre on an average, and the lands of the United Kingdom, that have been cultivated for a thousand years, should yield 31 bushels, and ours only 12, except it is poor farming.

But I must not consume more time on this branch of the subject. My limit of twenty minutes is up. I will yield the floor, unless you wish me to submit what I may have to say about fruit growing.

We are next to inquire as to the condition of the fruit industry in California.

The ledger of many fruit growers in 1894, as also in 1893, has not verified fully the high hopes held out in 1892, when I reviewed the then condition of the industry, notably as to green fruit shipments.

Fortunately we do not find ourselves driven into the interior of India and Russia and to the remote corners of the globe in search of data from which to make deductions. We stand face to face with the conditions that affect us.

Let me indulge in a brief retrospect. We need not go back far, for ours is essentially an infant industry still in its swaddling clothes, albeit it is strong and lusty, and, like Shakespeare's Richard III, was born with teeth.

The fruit industry of California for export (*i. e.*, for sale without the State) practically began about 1880, in which year we sent out 546 carloads of all kinds. I have compiled the shipments from official data in annual reports to the State Board of Trade, for the years 1890, 1891, 1892, and 1893. I have been able in these reports to show the shipments, stated separately, of green deciduous fruits, citrus, dried, raisins, nuts, canned fruit, and for 1891–2–3 of wines and brandies. I submit a summary of these statements tabulated, from which you can see at a glance the progress made.

I now add to my former tables the per cent of gain and loss in the years following 1890, compared with the latter year. This expresses the gain or loss in three years. Our exports of—

Green deciduous fruits show a gain of	133.57 per cent.
Citrus fruits show a gain of	136.06 per cent.
Dried fruits show a gain of	12.00 per cent.
Raisins show a gain of	81.00 per cent.
Nuts show a gain of	127.78 per cent.
Canned fruits show a loss of	43.00 per cent.
Wine and brandy show a gain of	39.00 per cent.

The year 1894 will show an increase, but not so great I think as heretofore. We did our heavy plantings in 1888–9. These trees bore in 1893, and hence the gain. The table shows no large gains until 1893.

Green deciduous fruits increased steadily. Citrus fruits gained in 1891, and fell back in 1892, but gained again in 1893.

Dried fruits held their own in 1891, but fell off in 1892, and only show a gain of 12 per cent in 1893 over 1890.

Canned fruits have fallen off 43 per cent since 1890.

Raisins have increased quite rapidly year by year, and in 1893 show a gain of over 81 per cent.

I think the dried fruit interest, in which raisins are not included in the tables, shows most favorably for the future, mainly because we have gained so slowly.

There is every indication that the experience of 1894 will result in much heavier exports of dried fruits hereafter. Later on I may speak of the causes. Radical changes must take place or this will be inevitable, and green fruit shipments will diminish correspondingly.

I have endeavored, in making my annual reports to the State Board of Trade, to obtain the shipments from all points in the State, but have been unsuccessful. I desired to show the distribution of the industry and its advancement in the different localities. The nearest I could accomplish this was to obtain the shipments from terminal points of the Southern Pacific system, north and south. In the south, Los Angeles is a common terminal. In the north, the terminals are San Francisco, Oakland, San José, Stockton, Sacramento, and Marysville. But this conveys a very imperfect idea of the distribution of our orchards. As a matter of fact, we load cars for export at nearly all railroad stations from San Diego to Redding—nearly 600 miles apart. As your reports are read in every State of the Union, and are consulted by home-seekers everywhere, I think I should make place here for these tables, showing at least the terminal points of shipment and the months when our products move. The tables are most instructive upon the capabilities of our climate. For 1893 I am able to give the shipments of vegetables.

Shipments of Fruits and Vegetables by Months from Northern California—1893. (Tons of 2,000 pounds.)

Month.	Terminals.	Green Deciduous Fruits	Dried Fruits	Raisins	Nuts	Canned	Citrus	Honey	Vegetables	Potatoes	Beans
January	San Francisco		333	63	22	984		29	1,137	91	582
	Oakland					29					
	San José		155			500					
	Stockton		60	1,608							11
	Sacramento		201	82		293			43	10	28
	Marysville		20	4		74					
February	San Francisco		473	144	10	891		3	1,539	127	837
	Oakland		21			108					
	San José		398			366					
	Stockton		91	1,195				1	35	27	
	Sacramento		132	66		288			20		13
	Marysville		56	1		147					11
March	San Francisco		304	55	13	427		3	1,346	81	590
	Oakland					82					
	San José		192			295					22
	Stockton		53	764		73				47	
	Sacramento		50			91			34		
	Marysville		15	9		31					
April	San Francisco		141	6	4	366		3	593	75	477
	Oakland										
	San José		16			200					
	Stockton		34	313		30				13	
	Sacramento		26			197		1	21		
	Marysville		1	2		14					
May	San Francisco		81	24		631		1	75	15	414
	Oakland					12					
	San José		117			163				21	
	Stockton		28	93		101			177		
	Sacramento	248	22			182	10		173		
	Marysville	12				24					10
June	San Francisco	13	58	7		431		13	242	55	293
	Oakland	280				43					
	San José	821	10			216					
	Stockton	566	39	87		155			292	65	
	Sacramento	2,912	27			130	14		794	586	
	Marysville	497				14				44	
July	San Francisco		27	48		486	12	26	86	326	253
	Oakland	60				85					
	San José	374				344					
	Stockton	1,044	324	45		10			126	130	11
	Sacramento	10,364	65			71			428	543	
	Marysville	973	11			61			10	23	
August	San Francisco	23	78	6		1,317	13	22	150	1,028	400
	Oakland	824	11			130					
	San José	1,661	345			318					
	Stockton	3,537	539	32		118		23		58	
	Sacramento	13,285	148			193			304	318	
	Marysville	1,446	86			67				11	
September	San Francisco		348	12	10	2,433		14	127	1,543	813
	Oakland	937	138			224					25
	San José	2,743	3,070			870			16		
	Stockton	2,887	1,428	405		47		58		123	
	Sacramento	9,787	772		10	397		1	114	372	
	Marysville	1,099	1,092			488			22		

Shipments of Fruits and Vegetables, etc.—Continued.

Month.	Terminals.	Green Deciduous Fruits	Dried Fruits	Raisins	Nuts	Canned	Citrus	Honey	Vegetables	Potatoes	Beans
October	San Francisco	49	1,086	109	22	2,508	----	37	155	1,564	2,135
	Oakland	701	142	------	----	390	----	----	------	------	------
	San José	2,309	8,468	------	----	1,157	----	11	------	------	------
	Stockton	1,833	1,681	13,053	----	90	----	38	14	325	13
	Sacramento	5,240	2,659	106	----	732	----	26	133	405	49
	Marysville	256	787	45	----	231	----	----	22	------	------
November	San Francisco	53	605	113	77	1,715	----	4	134	1,044	2,067
	Oakland	122	298	13	----	145	----	----	------	------	------
	San José	1,557	4,273	------	1	807	----	1	------	10	48
	Stockton	416	699	10,088	1	53	----	61	------	15	------
	Sacramento	1,301	1,589	313	5	386	----	4	43	26	156
	Marysville	109	373	105	----	84	----	----	------	------	------
December	San Francisco	67	594	107	15	612	----	12	739	1,517	792
	Oakland	30	29	------	----	13	----	----	------	------	------
	San José	736	1,370	6	----	358	----	----	------	80	------
	Stockton	------	221	2,629	----	97	----	2	12	92	23
	Sacramento	353	565	490	----	345	----	12	12	62	------
	Marysville	136	262	90	----	37	----	----	------	------	------

NOTE.—Endeavor was made to obtain monthly shipments from all points, but only one transportation company returned report by months. This report embraces shipments from all terminal points in Northern California, and shows when our products are moved, for all go during these months.

Shipments, by Months, of Fruits and Vegetables from Southern California—1893. (Tons of 2,000 pounds.)

Month.	Deciduous Green	Dried Fruits	Raisins	Nuts	Canned	Citrus Fruits	Honey	Vegetables	Potatoes	Beans
January	------	87	------	------	56	459	------	189	10	882
February	------	13	31	9	47	1,468	------	147	------	1,373
March	------	1	69	------	1	5,433	1	179	------	718
April	------	1	------	------	------	7,583	------	554	------	241
May	------	------	14	------	------	9,123	1	913	45	359
June	11	------	25	------	57	5,828	43	553	1,974	311
July	75	44	------	------	------	1,455	12	174	2,696	95
August	68	125	------	------	44	66	189	100	848	168
September	44	293	------	------	284	14	100	104	121	1,448
October	17	423	207	144	313	13	131	117	47	4,908
November	13	226	378	382	174	12	49	111	63	2,666
December	15	44	228	10	40	298	24	138	11	1,239
Total tons	243	1,257	956	545	1,016	31,752	550	3,279	5,815	14,408
Total cars	24.3	125.7	95.6	54.5	101.6	3,175.2	55	327.9	581.5	1,440.8

NOTE.—I was unable to obtain all the shipments by months from all the transportation companies, and hence the monthly shipments are incomplete. The totals appear elsewhere. These tables, however, show in what months our fruits and vegetables are moved.

Total Shipments, by Months, of Fruits and Vegetables from Northern California—1893.
(Tons of 2,000 pounds.)

Month.	Green	Dried	Raisins	Nuts	Canned	Citrus	Honey	Vegetables	Potatoes	Beans
January	--------	769	1,757	22	1,880	------	29	1,180	101	621
February	--------	1,171	1,406	10	1,800	------	4	1,594	154	861
March	--------	614	828	13	999	------	3	1,380	128	612
April	--------	218	321	4	807	------	4	614	88	477
May	260	248	117	------	1,113	10	1	425	36	424
June	5,089	134	94	------	989	14	13	1,328	750	293
July	12,815	427	93	------	1,057	12	26	650	1,022	264
August	20,776	1,207	38	------	2,143	13	45	454	1,415	400
September	17,453	6,848	417	20	4,459	------	73	279	2,038	838
October	10,388	14,823	13,313	22	5,108	------	112	324	2,294	2,197
November	3,558	7,837	10,632	84	3,190	------	70	177	1,095	2,271
December	1,323	3,043	3,322	15	1,462	------	26	763	1,751	815
Totals	71,662	37,339	32,338	190	25,007	49	406	9,168	10,872	10,073
Cars	7,166.2	3,733.9	3,233.8	19	2,500.7	4.9	40.6	916.8	1,087.2	1,007.3

Total Shipments out of the State by Railroads, of Fruit, Vegetables, and Honey in 1893.
(Tons of 2,000 pounds. Given from terminal points only.)

Place of Shipment.	Green Deciduous	Dried Fruit	Raisins	Nuts	Canned	Citrus	Honey	Vegetables	Potatoes	Beans
Northern California.										
San Francisco	205	4,128	694	173	12,801	25	167	6,323	7,466	9,653
Oakland	2,954	639	13	--------	1,261	--------	--------	--------	--------	25
San Jose	10,201	18,414	6	1	5,594	--------	12	16	111	70
Stockton	10,283	5,197	30,312	1	774	--------	183	656	895	58
Sacramento	43,490	6,256	1,057	15	3,305	24	44	2,119	2,322	246
Marysville	4,528	2,705	256	--------	1,272	--------	--------	54	78	21
Total tons	71,661	37,339	32,338	190	25,007	49	406	9,168	10,872	10,073
Carloads	7,166.1	3,733.9	3,233.8	19	2,500.7	4.9	40.6	916.8	1,087.2	1,007.3
Southern California.										
Los Angeles and other points	8,291.5	3,899.4	5,056	1,602.5	2,833.7	80,708	550	19,471	5,815	14,408
Total carloads	829.1	389.9	505.6	160.2	283.3	8,070.8	55	1,947.1	581.5	1,440.8
Total carloads from the State	7,995.2	4,123.8	3,739.4	179.2	2,784	8,075.7	95.6	2,863.9	1,668.7	2,448.1

NOTE.—The Southern Pacific Company reported all Southern California shipments from Los Angeles, so that this table could not give total from the several terminals. The terminals are Los Angeles, Orange, Riverside, San Bernardino, and San Diego. Only one company reported potatoes and beans separately. The Santa Fe Company did not report shipments of honey.

Wine and Brandy Shipments by Rail and Sea—1891-92-93.

Kinds.	1891.	1892.	1893.
	Gallons.	Gallons.	Gallons.
Wine by rail	5,621,179	6,330,624	8,711,684
Wine by sea	5,492,850	4,843,128	3,736,859
Brandy by rail	305,886	366,763	500,166
Brandy by sea	493,726	540,967	293,231
Total gallons	11,913,641	12,081,472	13,241,940
Expressed in carloads	4,765.4	4,832.5	6,620.9

Shipments of Fruit by Sea—1893.

Canned, cases		124,522
Dried, pounds		823,560
Green, packages		5,162
Raisins, packages		1,244
Total pounds	8,635,570	
Total carloads	431.7	

General Summary and Comparative Table of Shipments by Rail and by Sea, of Fruit, Wine, Brandy, and Vegetables.

Kinds.	Pounds 1890.	Pounds 1891.	Pounds 1892.	Pounds 1893.	Gain Per Cent in 3 Years.
Green deciduous	68,084,124	96,689,100	111,688,640	159,905,000	133.57
Citrus	68,419,370	93,862,800	69,862,800	161,514,000	136.06
Dried fruits	64,595,181	65,090,220	58,735,980	82,476,800	12.00
Raisins	41,120,330	44,954,850	53,113,320	74,788,000	81.00
Nuts	1,574,230	2,623,560	4,015,240	3,585,000	127.78
Canned fruits	80,121,950	49,566,680	77,555,820	55,681,400	43.00 loss.
Total pounds	323,915,185	354,778,210	374,324,000	537,950,200	
Carloads fruit by rail	16,195.7	17,738.9	18,741.2	26,897.5	
Carloads fruit by sea		954	1,754.5	431.7	
Carloads fruit by rail and sea		18,692.9	20,495.7	27,329.2	
Carloads vegetables by rail				6,978.4	
Carloads wine and brandy by rail and sea		4,765.4	4,832.5	6,620.9	39.00 gain.
Carloads fruit, vegetables, wine, and brandy, by rail and sea				40,928.5	

These tables present some facts at once new and instructive, and from which we may draw some interesting deductions.

We commence exporting green deciduous fruits in May, and continue without cessation until and including December—eight consecutive months; and now that apples are being sent East we may add two more months.

We ship citrus fruits every month in the year.

We send out fresh vegetables, including potatoes, every month in the year.

We ship dried fruits, raisins, honey, canned fruits, and beans every month in the year, and nuts nearly every month.

The bulk of green deciduous fruits are sold in July, August, September, and October, the greatest monthly shipment being in August. Over 2,000 carloads were shipped from the northern part of the State in that month of 1893.

Canned goods move with the dried fruits. The shipment of fresh vegetables shows new possibilities. We sent away over 2,000 carloads in the first three and the last two months—practically winter months at the East—and 6,798 carloads in the year. The garden is becoming a close companion of the orchard in California.

The time has passed when we find it necessary to urge tree planting and are forced to adduce evidence of the capability of soil and climate. Everybody understands now what we can do. By our fruits we are known.

The real problems for solution relate to our market, and we may as well admit at once that they are vital to success. Any treatment of the matter except with frankness and candor would be unjust to ourselves and unjust to the industry. We have invited the people of other States to come here and make homes and engage in horticulture. The land barons, and the land-grant railroad companies, and speculators and dealers in real estate, and commission merchants, and fruit dealers, have made the fruit industry the chief attraction to home-seekers from the East and Great West.

These agencies, especially the land-grant railroad companies, have been active in promoting settlement here, and have not always been scrupulous in locating their people. The result has been a great deal of tree planting on unsuitable land, and not always of desirable fruits, and of bad handling of orchards and orchard products. Now that we have the industry so deeply rooted, and now that it is spreading by its own momentum as rapidly as it ought, the question of our market presses upon us.

I have shown that the shipments of green deciduous fruits increased over 133 per cent in three years ending 1893. This is by far the most important branch of our business. If it can be maintained at the profit easily attainable it will always solve our problem. It means quick returns of cash; it means the minimum of labor in preparation for market; it means relief to the market of fruits in the dried form; it means consumption by a large class of persons who use little if any dried fruit; it means a market in advance of the season for consumption of dried fruit, and at a time when the demand is for fresh fruit. To the transportation companies it means freight charges on about six times as much fruit as they would get in the dried form, and withal more profit to the grower than in the dried form, if prices can be maintained.

In the face of this, however, there is danger that shipments of green deciduous fruits will fall off greatly, if they do not cease altogether, should we have a repetition of 1893 and 1894. I know there were special causes at work in 1893 and 1894 that may not appear again for years, but these aside, the business is on a very precarious footing. It is, under existing conditions, the most uncertain game of chance I know of, unless it is betting on the jumping bean of Mexico.

It seems impossible to bring the transportation companies to a realizing sense of the situation. We have been driven, through the failure of railroad companies to expedite ventilated cars, to the use of ice. We must pay for the ice, and also for its transportation, and also a profit to the builders of refrigerator cars, and this just about absorbs all there is in the business as profit to the grower. And all this is unnecessary, for much of our fruit, if we could have quick transit.

I don't know much about railroading, but it does seem to me that a train of fifteen cars could be taken on passenger time to Chicago for

$300 a car, especially when the business furnishes 8,000 cars in a season. I cannot believe that there is no profit in taking such a train for $4,500, which is nearly $1,000 a day, even if the cars must come back empty. The ventilated car service offered to us now is a snare; it is of little value to the industry, simply because the time is uncertain, and has been displaced by the burdensome refrigerator service, which adds to the profits of transportation and middle men, and leaves little for the producer. The item of refrigeration also in our statements serves the purpose of that much-abused item of sundries. It is a cloak to cover up profits that should go to the grower. In straight cars by one shipper this may not be easy, but in mixed cars by many shippers it is quite simple.

Mr. W. H. Mills stated in the State Board of Trade, when appealed to to enlist the aid of his company in perfecting Dr. Perkins' system of compressed air in lieu of ice, that he didn't see just why the railroad company should aid in an effort to make two cars do the work of three when they could get pay for three. Mr. Mills is too deeply and seriously interested in the successful development of the fruit industry, and besides is too patriotic, to mean what he said. And, in fact, I understand his company is aiding not only that plan, but also the carbonic acid gas system of fruit preservation.

The truth is, and I speak it, hoping it may reach the eye of railroad managers, that the existence of the fruit industry in this State lies with them. Fruit growing is expensive; it is attended with many risks; the market is far away; the transit is attended with new and still greater risks than is the growing. But it is the one industry that is to populate the State and make transportation lines profitable. The future of railroad profits lies in parallel lines with our profits. We have created for the transportation companies in less than fifteen years over 40,000 carloads of freight annually, of which the railroads get over 34,000 carloads. By the attractions and promised profits of fruit growing we have added a quarter of a million of population who are now contributing to the earnings of the railroads, through their increased passenger traffic and their increased freights distributed to these people.

This newly created freight traffic, bringing in eight or ten millions of dollars annually to the railroad companies, represents only a part of the added traffic by reason of the fruit industry. Every consideration of self-interest should lead these companies to help us in all possible ways. They should come to us, rather than we go to them. Their strongest and ablest men should be here to-day asking what they can do to promote our success. There is no reason why these people should deal with us at arm's length, or on the principle of driving hard bargains and getting all out of the business possible. The Southern Pacific Company has brought thousands of immigrants to this State to grow fruit for profit. It has used our literature, and our experiences, and our facts to induce them to come. In common honesty it should help to make good its own representations.

There is another thing about which I wish to speak plainly. We cannot now ship green fruits except through some one of the half dozen commission houses owning or controlling some one of the devices for refrigeration. These firms I am told share the profits of the extra service (I mean outside the regular car rates) with the railroads. This is wrong in principle and gives the railroads a motive to force us to use these particular cars which they ought not to have, and it only ties up the fruit grower more tightly. In addition to the profits there may be in this branch of the cost of transit, we must pay the commission merchant 7 per cent for selling our goods. He gets a profit on the packing, on the loading, and on his ice, and on his system of cars, and 7 per cent on whatever the goods sell for. The transaction is begun and ended inside of two weeks. He takes no risks whatever, and bears no losses, and yet his compensation for this short service amounts to a fair rate of interest on all the proceeds for one year. I assert that this is the largest per cent paid for similar service in disposing of any agricultural product in the country.

Must we always submit to this irrational method? It lacks the first elements of mutuality. Furthermore, these same commission firms are often open purchasers and become competitors with the shippers. The motive of seeking the best market or exercising intelligence in directing the point of sale is wanting, for he gets his commission in any event. Why should not these operators take at least some of the risks? Our fruit, for the purpose of fixing this share of the risk, ought to have some value at the place of shipment. Let it be at least 1 cent a pound, if you please. If these goods sell to net that much to the grower, then pay, say 5 per cent commission; if it nets over 1 cent, pay 7 per cent; if it nets less than 1 cent or is sold at a loss, pay not over 2½ per cent. The reasons for some such plan of graduated commissions are obvious. The shipper will work for the best market. He has an interest in common with us, and he shares measurably the results of his bad judgment or bad luck in selling.

I think, too, the usual commission of 5 per cent for selling dried fruit is too much. This transaction is even sooner over and involves much less trouble to the commission man than the sale of green fruits. Besides, there are frequently two or three commissions before the fruit reaches the East.

I think the wheat buyers of this State never pay over 2½ per cent commission.

What I mean by all this is not that a fair compensation should not be paid, or that commission merchants are not needed—for they are—but that our fruit industry has reached such proportions that it deserves to be classed with the leading agricultural products of the country, and these products should be handled, not as fancy articles or luxuries, but as food products forming a part of our commerce.

Another thing: As fruit products, the great disparity between the price paid to the producer and the price paid by the consumer should not exist.

It is the worst drawback to our success to-day, as to dried fruits especially—much worse than the matter of transportation—that when we sell dried peaches here at 6 cents and prunes at 4 or 5 cents, we know they go into consumption at 12 and 15 and 20 cents a pound. Let it be said to the credit of the railroads that to our 6 cents they add only 1¼ cents. Most of the balance goes where it ought not.

And all this is because the fruit dealer persists in treating fruit as a luxury, and we are thus held apart from the consumer by purely artificial barriers.

This is not true of any other agricultural product. The margin on almost every food product is small, and before we can enlarge consumption to meet our increasing production we must reach the consumer more directly. Our 5-cent prunes must not cost him more than 9 or 10 cents, and our 6-cent peaches not more than 10 or 12 cents. He will then buy two or three pounds where he now buys one or refuses to buy any, and we will sell all we can grow.

I shall not stop now to point out the willing markets of the East, when we learn how to reach them, nor will I delay you to urge greater coöperation among fruit growers by the formation of exchanges like that in Santa Clara County and the California Fruit Growers' Exchange, nor will I delay you to go over the oft-repeated argument that has given the fruit industry its supremacy in California. There should come a time when we may assume that the people of this country know what California can do. I think that time has come.

I have often said, and I repeat it, that we do not need so much a still lower freight rate for fruit as we want a quicker and more reliable transit, and that we shall not be made to pay for ice and pay for hauling it, and also a royalty for the use of a specially constructed car to put it in—all of which adds 50 per cent to the cost of marketing our fruits.

We seem to be on the eve of a successful method of shipping fresh fruits without ice and by a small expenditure over the ventilated car. Both Dr. Perkins' plan for using compressed air and the San José plan for using carbonic acid gas are reported as successful. Let us hope that these methods will not be manipulated so as to destroy their practical value to the fruit grower.

As for the market taking all we can grow, at fair prices to the consumer and profitable prices to us, I have never doubted, and I do not now doubt, provided—

First—That we offer only first-class goods honestly packed and in good condition;

Second—That the transportation companies will promptly deliver the goods by some method that requires us to pay reasonable freight on the fruit only; and,

Third—That we can reach the consumer with reasonable profits only to the middle men, added to the cost of reasonable transportation charges.

REPORT OF COMMITTEE.

Mr. Weinstock, of the Committee on Transportation, read the following report of the committee, which, on motion of Mr. Block, was received and accepted and the contents thereof indorsed:

Your Committee on Transportation, appointed by this convention, begs leave to submit the following partial report:

That they have organized by the election of H. Weinstock as Chairman and F. H. Buck as Secretary.

That it is the sense of this committee that all fruit growers and growers' associations be requested to send to the Chairman of this committee resolutions stating what their different localities require, and also to furnish such data as can be used by this committee to show the disastrous results of the past season.

That it is the sense of this committee that they wait upon the officials of the Southern Pacific Company and lay before them our demands for lower rates for green and dried fruits, and faster time for green fruits.

That they hereby request the convention to add to this committee the President of the California Fruit Exchange.

That this committee shall hold its next meeting in San Francisco at rooms of State Board of Horticulture, Tuesday, December 11th, at 1 o'clock P. M.

H. WEINSTOCK, Chairman.
FRANK H. BUCK, Secretary.
DOUGLAS T. FOWLER.
H. P. STABLER.
N. W. MOTHERAL.
GEO. D. KELLOGG.

RESOLUTIONS.

MR. SPRAGUE submitted the following resolutions, which were referred to the Committee on Resolutions, with instruction to report as soon as possible:

The Convention of California Fruit Growers, assembled at Sacramento, California, November 21, 1894, believes that the high roads are the arteries of a nation's commerce, and, as being essential to the nation's well-being, should be owned and controlled by no private monopoly; that railroads *are* the high roads of the nineteenth century; that whoever owns them owns a monopoly so tremendous and overshadowing that it should only be permitted in the hands of the people's government, to be operated for the benefit of the people; therefore, be it

Resolved, That the interests of the people of California imperatively demand that a line of railroad through the length of the two great valleys of the Sacramento and the San Joaquin should be constructed and operated or controlled by the State, and that the Legislature be asked to submit to the people such legislation as will secure the early construction of such road.

Resolved, That it is the sense of this convention that the United States Government should foreclose its mortgages against the Central and Union Pacific railroads at their maturity, and assume control of the same under such regulation of service as will secure efficiency and yet not extend the evils of political patronage.

THE WRIGHT IRRIGATION DISTRICT LAW; ITS DEFECTS AND REMEDIES THEREFOR.

By L. M. HOLT, of Los Angeles.

California is possessed of an arid climate. The lands of the State, as a rule, produce crops with great uncertainty, when the natural rainfall is depended upon for the needed moisture. Some lands although naturally rich and productive are absolutely of no value without the application of moisture artificially. Other lands sometimes produce crops and sometimes they fail to do so. While still another class of moist lands produce good crops every season by virtue of the natural moisture in the soil.

Because of this arid condition of the State, this country was considered originally of no value from an agricultural standpoint, and hence the original Mexican population devoted their energies to raising stock and cultivating in a limited way the few tracts of moist land to be found along the margins of streams or in the vicinity of cienegas.

The placer gold boom of 1849–50 gave the State a vigorous start in the direction of mining. After the bursting of that boom many of the temporary miners returned East to their old homes, while others, driven by force of circumstances, sought to make a living or competence in stock raising and ranching.

Gradually it became evident that California soil was productive when the moisture was sufficient. Fortunes were made by farming on a large scale, because of the big crops raised and the high price of the products. At other times fortunes were lost by farming on a large scale by the failure of the crops on account of the lack of rainfall, notwithstanding the high price of the products. Thus the rainfall became the barometer which foretold the prosperity or the financial depression of the State, and agriculture became an extra-hazardous risk except where it was carried on in connection with the limited area of the moist lands.

The original Mexican population understood the situation, and in some sections of the State, especially in Southern California, they diverted the streams, where such work could be done without too much labor, and thus insured the success of their crops by means of irrigation.

When the more energetic American race began to take possession of the land they took lessons from the old settlers, but improved upon their methods. They organized irrigation companies, and took out the water on a larger scale and took it up on the higher levels, where better soil could be found. This was first done by organizing neighborhoods where the owners of the land would club together to do for a community and for their own benefit what one man could not do singly and alone.

The keen-eyed capitalist next saw a chance to turn a penny several times in a few minutes. He would hunt up a good location where he could buy a large tract of dry land for a song, file on a good stream of water, construct a canal or irrigation system, and then sell off his land and water at prices limited only by what the traffic would bear, and thus settlements were made. Sometimes those prices and water rates were satisfactory and sometimes they were burdensome.

About this time the strong arm of the law was invoked, and the Board of Supervisors and governing bodies of incorporated cities and towns were empowered to fix water rates for irrigation as well as for domestic use. Capitalists called a halt and there was a cessation of construction of irrigation systems on the old plan.

In 1884 an irrigation campaign was commenced in this State. It had its origin at the first State Irrigation Convention held in the city of Riverside in May of that year. This movement had two objects in view: the repeal of that old common law idea of riparian rights, and the other was the enactment of a law providing for the organization of irrigation districts.

The first State convention was followed by a second at Fresno late that same year, and a third at Sacramento at the opening of the Legislature the following January, and the fourth one in May, 1886, in San Francisco.

The work before the Legislature in 1885 resulted in failure, because of lack of time to reach the bills.

In the meantime, prior to the holding of the San Francisco convention in May, 1886, the Supreme Court had rendered its celebrated riparian rights decision in the case of Lux vs. Haggin, by a vote of four to three of the Supreme Bench. This irrigation campaign ended disastrously in the extra session of the Legislature of 1886, which was called by the late Governor Stoneman (with the best of intentions), who had in his possession before the session was called the written guarantee of a majority of both branches that they would pass those irrigation bills if he would call the session. These pledges were never fulfilled, and the Legislature did nothing but elect a Republican United States Senator to succeed a Democratic Senator (Hearst) whom Governor Stoneman had appointed to fill a vacancy occasioned by the death of Senator Miller.

At the following regular session of the Legislature, however, the riparian section of the Civil Code was repealed and a law providing for the formation of irrigation districts, introduced and fathered by Hon. C. C. Wright—and ever since known as the Wright irrigation district law—was enacted.

This brings us down to a consideration of the defects of that law and the remedies thereof. The law was made as perfect at first as the circumstances would admit. It was a new departure in the way of legislation, and hence no one knew just what was wanted, nor just how the system as presented would work. Mr. Wright did a good work in making the law as perfect as it is. There were constitutional obstacles in the way of a perfect system, even if the Legislature had felt disposed to grant whatever might have been asked by the friends of the district system. As it was, the law was made as perfect as it was possible to make it. For eight years the law has been on trial. Over forty districts have been organized. At every session of the Legislature amendments have been asked for, and made. The Legislature has never in a single instance passed an amendment not asked for by the friends of the system, and it has refused every time to pass any bill asked for by the enemies of the system.

Out of the forty or more irrigation districts organized, but few have completed their systems and brought their lands under successful irrigation. Several districts have been disorganized under the law passed by the legislative session of 1893. Many districts have sold a portion of their bonds, but cannot complete the unfinished systems because of inability to sell more bonds. Some districts were organized purely for speculative purposes, with a view to selling water rights at exorbitant figures, taking bonds in payment for the same. Such districts should never have been organized.

For two years past there has been very little progress made in the irrigation district work of the State. No new districts have been organized; several old ones have been disorganized, and more should have been, for they are practically and most effectually dead. One or two districts have sold bonds, and commenced active construction work, but, as a rule, the districts are at a standstill, unable to either go ahead or back out of a bad bargain.

There is evidently some good cause for this condition of affairs. What is it?

Evidently the law is not entirely suited to fit the conditions. It is true that an important case is pending in the Supreme Court of the United States, touching the constitutionality of the district law. That case was argued on the 15th and 16th of October, but up to the present time no decision has been rendered.

There are radical defects in the law, and the district system will never meet the expectations of its friends until those defects are remedied by (1) State supervision; (2) State guarantee.

The Legislature at its forthcoming session should submit an amendment to the State Constitution providing that the State may issue and sell its bonds in order to create as may be needed an irrigation fund. As soon as that amendment becomes a part of the Constitution there should be created a State Board of Irrigation, composed of the Governor, Attorney-General, Secretary of State, Surveyor-General, and a State Engineer. The plans for forming all irrigation districts should be submitted to this

Board. The State Engineer should thoroughly investigate all questions connected with the district from an engineering standpoint. The Attorney-General should investigate the legal question connected with the work, and the entire Board should examine the enterprise from a business standpoint, just the same as though a bank were making the investigation with a view to buying the bonds.

If upon thorough investigation the State Board of Irrigation should find that the legal, engineering, and business points were all satisfactory, they should then authorize the formation of the district, fixing the amount of the bonded debt. The people could then go to work and form the district, vote the bonds, and offer the same for sale. These bonds should run twenty years and should bear 5 per cent interest. When offered for sale the State should offer to take the entire issue or any part thereof at par. If any other party should put in a higher bid they could do so and the bonds would be sold to the highest bidder. If the bonds were sold to the State the State officials should then offer for sale State bonds, bearing 4 per cent interest, enough to raise the money to buy the irrigation district bonds offered. The State would thus make 1 per cent interest on all the district bonds bought, and this sum would amply repay the State for the expense of its Irrigation Board and practically guaranteeing the bonds of the district.

There have been $16,000,000 of irrigation district bonds voted and offered the public. If these bonds were sold at 10 per cent discount there would be a loss to the district of $1,600,000. Those bonds bear 6 per cent and run an average of fifteen years. The interest saved at 5 per cent would thus amount to $160,000 a year, or $2,400,000 for the fifteen years. This system would therefore save to the districts over the present system the sum of $4,000,000, to say nothing of the many bonds traded for water rights and water works where the districts paid double the price they would have had to pay had they been able to make the deal on a cash instead of bond basis.

Again, capitalists would buy irrigation district bonds bearing 5 per cent interest and pay a premium for the same if issued under supervision of the State in such a manner that the State would be willing to buy them at par, rather than buy State 4 per cent bonds, or rather than buy the present irrigation district 6 per cent bonds at a discount of 10 per cent. In this case the State would be a great benefit to the district system without great expense, saving millions to the districts and therefore saving millions to the State.

Under such a revised law arrangement should be made for the reorganization of the districts already organized, so that they could operate under the new law; also for the disorganization of districts that could not get the authority of the State Board to reorganize. Thus the present districts could either reorganize or disorganize, or go ahead as they are under the present law.

Irrigation is not a temporary question. It is here for all time. It is here to stay. Our people must face the music. We cannot afford to struggle eternally under a weak system. The present system is acknowledged to be weak. It must be strengthened. Herein is outlined one method of strengthening that system. There may be better ways of doing this work. If so it is in order for some one to suggest such an improvement. Something must be done, and there should be no delay.

It takes time to make these changes, especially if the Constitution must be amended. If it were not for the delay it would cause, the next Legislature should appoint a commission to thoroughly examine into this irrigation district system and see what should be done to strengthen it, with instructions to report to the next session of the Legislature by bill or otherwise. This, however, causes delay, and time is valuable. Such action would be preferable to no action, provided a competent commission were appointed. Such a commission would report in 1897. If a constitutional amendment were then considered necessary, such amendment could not be ratified until 1899, when a bill carrying out the provisions of such an amendment could be enacted, and the present century would be closed before anything would be accomplished under the new programme.

It might be better for the next session of the Legislature to submit a constitutional amendment, as above suggested, for the action of the people, and also appoint a commission, who should report to the Governor before the next election, when they could recommend the adoption or the defeat of such amendment, and two years of valuable time could thus be saved. Such a commission should be composed of a first-class constitutional lawyer, a first-class financier, a good competent civil engineer, and about four practical irrigation men, who have given irrigation a study and who know the practical workings of the present system and the needs of the irrigated sections of the State.

It is not necessary for me to remark that in the opinion of most of our people California is a great State. It cares for its needy wards in a munificent manner, its public schools are the pride of our people. Agriculture and horticulture receive the fostering care of the State. Our people enjoy the finest climate, and, under favorable conditions, reap the richest harvest of fruit and grain of any people in the known civilized world. We have here the foundation of an Empire State second to none in population or wealth, when our natural advantages are properly developed and the obstacles in the road to future greatness are properly removed. That greatness will eventually be reached, but the date of its accomplishment depends upon the wisdom with which the law-making power of the State shape our statutes so as to enable the people to make two blades of grass to grow where none grew before.

Adjourned till Friday, November 23d, at 9 A. M.

PROCEEDINGS OF THE FOURTH DAY.

FRIDAY, November 23, 1894.

[Vice-President BUCK in the chair.]

MR. ADAMS: I have obtained facts from the Southern Pacific Company and from the Southern California Railroad which enable me to give statistics of all the shipments of dried fruit that have gone out from the State this year, except those which went by sea, and which will not materially change the result. There are two or three little elements of error in the figures which have been given me, and which I have had to make an estimate to cover. The figures arrived at are these: In 1893 there were sent out in carloads of twelve tons, 1,744 carloads of raisins, and in 1894 there were 1,664 carloads—80 carloads less than in 1893. Of dried fruits in 1893, during that period there left 1,086 carloads, not including prunes. In 1894, during the same period, there were shipped 1,829 carloads. None of the companies are able to furnish the statistics of different kinds of fruit, except at stations here and there. Shippers have not done as requested by the railroad company, and it is impossible to get figures as to the different kinds of fruit.

REPORT OF COMMITTEE.

MR. KELLS, of the Committee on Resolutions, submitted the following report, which was adopted:

Gentlemen of the Convention:

Your committee respectfully makes the following report upon the series of resolutions referred to the committee for their consideration.

We recommend the adoption of the resolutions referring to the "Nicaragua Canal," the "Mining Debris Question," and "Government Foreclosure of the Mortgages held against the Union and Central Pacific Railroads."

Your committee refers back to the convention, without recommendation or prejudice, the resolution referring to the "State building a railroad through the San Joaquin and Sacramento Valleys."

(Signed:)
R. C. KELLS, Chairman,
D. T. FOWLER,
P. E. PLATT,
Committee.

MR. SPRAGUE moved the adoption of the resolution providing for State construction of railroads, which was reported to the committee without recommendation. The resolution was read.

MR. SPRAGUE: Such a proposition as this is startling, because it is not in line with our train of previous thought. But if we will stop to consider we will find that our thought is tending inevitably in the direction of an industrial movement of this kind. Students of political economy are now coming to the conclusion that competition as a means of regulating trade has been a failure. We look forth upon this country and we find a whisky trust, a Standard oil trust, a lumber trust, a coal trust, and so on. We find railroad companies joining together for their own selfish advantage. Of course all this is in harmony with human nature. But what we are considering now is what is to the advantage of the producer? What shall he do in the face of this universal tendency of all interests to combine for their own advantage? The producer is at the greatest disadvantage. He cannot effect a combination. If he allows himself to be bound hand and foot by these combinations of capital he is ruined. Of course we know that the multiplication of railroads has facilitated intercourse among the producers. And I may be told that freight rates have been reduced from time to time. That is very true; but it is because of industrial improvements. When Bessemer's steel rails sold for $100 a ton, of course it cost more to transport freight than it does now when they can be bought for $15 a ton. And the reduction of freights is attributable to improvements rather than to the multiplication of railways or their competition. I do not think any one here in California will spend any time in arguing the necessity for some relief for the internal traffic of the State of California. The necessity for that relief has been felt for twenty-five or thirty years. It is not in the nature of things that we can stand these burdens forever. They will overwhelm us. This proposition is a feasible one. There are now forty-two countries that either own or control their railroads. In fact, there are more countries that control their railroads than there are that do not. So this proposition is no new thing. State ownership of railroads has contributed more to the prosperity of certain districts, very much like our own, than any other single agency. The prosperity attending that movement in New Zealand is certainly greater than that of any other portion of the earth's surface to-day. You all know the history of the construction of the New York and Erie Canal. That was hotly contested, but it was finally carried; and I think that it stands on record to-day as one of the wisest things that the people of New York ever did. It may not be wise for our people to build this road and operate it. Perhaps it may. But I would go this far: I would have the State build a line of track for the districts through these great valleys, where the track can be most inexpensively laid, and I would have it opened as a high-road to all the railways that desire to reach our goods, desire to act as common carriers for us, upon payment of a suitable toll. There will then be means for self-protection to the producers of California.

Mr. Wilcox: The building of the canal was all right at first, but it was not long before it became a mighty engine of political power. The same results would follow here, and the taxpayers would find, too late, that they had saddled a burden on the State which they could not shake off.

Mr. Motheral: Something must be done to save our industrial population. It is not a question of politics or of fancy policy, but a question of absolute life to the industrial portion of California. It is nonsense to talk about the building of new roads by individual enterprise. The rule of the survival of the fittest operates in all such cases, and that rule is a barbaric rule. It means the destruction of the weak by the strong. There is another law which humanity has always insisted upon ignoring, and that is altruism, or looking out for the other fellow who lies at the bottom of society. The road can certainly be built and operated if other countries can own their roads. There is no use of asking relief from the railroads. They have power to control matters in their own interest, and they will do so.

Mr. Berwick: If forty-two countries can own their own railways, this country can do that same thing. If we cannot do it, let us change our government and get a government that can do it.

Mr. Hutchings: This proposition of the State building railroads is a pretty big one. I had hoped to see a proposition made providing for the opening of the great natural arteries, the rivers of the State. These rivers are far better than any railroad that can be built. We have permitted those rivers to be destroyed, and not one word has been uttered in opposition to it. Here is the Sacramento River running from one end of the valley to the other, a far better competing line against the railroad than any road that can be built. There are the branches of the Sacramento; the Feather River, which has been navigable to Marysville and Oroville. As things are going it will not be long before these rivers become innavigable from one end to the other. And I think the attention of our fruit growers ought to be turned to them as a means of competition against the railways.

Mr. Motheral: The proposition that we shall take care of our rivers is all right, and we are willing to help to do so for the benefit of those in the northern part of the State. But the gentleman is advocating a selfish policy, for those rivers lie in the northern part of the State, and their improvement will not benefit the farmers in the big valleys in the southern part.

Mr. Buck: In advocating the building of a State railroad the gentlemen have overlooked the fact that competition in our valleys would give relief to but very small sections of the State, whereas the cost of building such a road, if applied to the building of a competing road across the mountains that would connect with Eastern roads, would give an outlet for the whole State, and connect all our producers with the markets of the East.

Mr. Motheral: Are you not very wide of the facts? You must remember that to build a road across the mountains requires a much greater expense than to build it through our valleys.

Mr. Sprague: The purpose of this resolution is not to fix a method by which the people of California must proceed, but it is simply that we may take the initiative, looking toward some relief from this source.

Mr. Fowler: The gentleman who addressed this convention the other day, and who said he represented the Southern Pacific Railroad, said that we could have as low freight rates as they do in India if we had labor at 20 cents a day, as they have there. That was not a fair comparison, and the gentleman himself knew it was not. Because a comparison made on the basis of 20 cents a day labor should be made between Government ownership and private ownership, run there. In every country where there is Government ownership of roads, and where there can be instituted a comparison with private ownership in the same country, the result is invariably in favor of Government ownership. I have some facts and figures which I have obtained from authoritative sources. I will give them to you and leave the thought with you. You may supply the deductions. One point made is that Government ownership does not amount to much in those countries where it is tried, and that it is tried in only small districts. As an offset to that statement we have heard on the floor to-day with regard to the great number of districts in which Government ownership exists. In Victoria, in the island of Australia, there are 2,975 miles of Government railroad; in New South Wales, 2,351 miles; in South Australia, 1,664; in Queensland, 2,377; in the little island of New Zealand, 1,948 miles. These are very considerable distances. Compare these distances with the mileage in California and you will find they are very important distances. And we find that everywhere those roads are run in the interests of the people and that they develop the country. I am heartily in favor of this resolution. Government ownership will remove the roads from political control and from the corruption which now characterizes their management.

Mr. B. N. Rowley moved to refer the resolutions to the next Legislature. Lost.

A vote being had on Mr. Sprague's motion to adopt, it was carried.

Mr. Motheral moved the appointment of a committee of three to present the matter to the attention of the next Legislature. Carried.

The committee as nominated consisted of Messrs. Fowler, Sprague, and Berwick.

The Secretary read a communication from the Carbonic Acid Gas Company, as follows:

FRUIT SHIPMENTS IN CARBONIC ACID GAS.

We wish to call attention to the process of preservation of fruit for shipping purposes by the use of natural carbonic acid gas. For the last two years we have been experimenting in San José with this process, and every experiment has been successful. We have taken Black Tartarian cherries from the tree fully ripe, and under this system of preservation kept them twenty-one days, at the end of which time they were in as perfect condition as the day they were picked from the tree. After this they were exposed in a warm room, with the thermometer standing at 80° to 90°, for several days before they showed the least signs of fungus or decay, and at this time only a few were affected. The bulk of them were taken to San Francisco and parties there. The Traffic Manager of the Southern Pacific Company, and the Secretary of the State Board of Trade, and others, were surprised that these cherries had been picked twenty-eight days.

Ripe apricots and plums were kept under this system for fourteen days, then put in cold storage for one week more, and were still in perfect condition. Ripe apricots were subjected to the same treatment, and at the expiration of eleven days were taken out and exposed to the air for thirty-six hours and then canned by the San José Fruit Packing Company.

All of these experiments were made in the cooking-room of said company under the high temperature ranging from 80° to 90°, caused by the furnaces. Sample cans of this fruit have been forwarded to be on exhibition before your convention. The reason for submitting these samples is because of the delicacy of the apricot.

After these repeated experiments and trials we feel justified in the more extensive demonstration of the process by the shipment of a carload of fruit East, and through the kindness of the Santa Fe and Southern Pacific Companies, who furnished transportation, we fitted up a car at Sacramento with two air-tight compartments and loaded it with fruit from Fresno, El Dorado, Placer, and Sacramento Counties in varieties as follows: Peaches, pears, quinces, persimmons, and grapes. At 5 P. M. October 13th, the car was sealed at Sacramento, the thermometer standing at 80°. The next morning at 6 o'clock, while the train was approaching Colfax, one of the locomotives on the train exploded and the concussion resulting therefrom caused the forward compartment to leak badly, and from that point to Chicago we were unable to keep it supplied with gas. At Gold Run the thermometer stood at 80°; at Ogden the car was side-tracked for eight hours with the thermometer standing at 90°. At Grand Junction the car was side-tracked for twenty-two hours, the temperature being 100° during the day. At Leadville the car was derailed and a further delay of eight hours was encountered. At Kansas City the car was side-tracked sixteen hours, and at that point the compartments were opened and the gas allowed to escape, as it was expected that the car would reach the auction house in Chicago in twenty-four hours. However, on arrival at Chicago the car was delayed at the stock yards twenty-six hours before it could be placed at the auction-rooms for unloading. When the car finally reached its destination it had been fifty hours without gas, and the temperature inside the compartments indicated 110°. Notwithstanding this the fruit from the compartment not damaged by the explosion was found to be in good, merchantable condition, and it was sold at public auction for prices as high as any refrigeration fruit brought that day. There were several carloads sold at the same timewhich had been but seven days in transit under ice refrigeration, while the time occupied in transit by our car was eleven days. Two days after the sale we had parties in Chicago look up the fruit after it had reached the hands of the retailers who had purchased some, and five days thereafter they reported the fruit in good condition, being seven days after its arrival. The fruit in the compartment which leaked on account of damage to the car was partially spoiled, which proves conclusively that without the gas process it would not carry. The carbonic acid gas process holds the fruit in a state of suspense and prevents it from changing its condition in the least while under treatment. During the time of transportation the temperature inside the undamaged compartment stood between 60° and 75°.

Further demonstrations were made here by putting green Bartlett pears under treatment, holding them in suspense for eighteen days, and then they were exposed at Wooster & Ensign's office in San José for fifteen days before they ripened.

Sufficient demonstrations have been made by us to prove that fruit can be kept a sufficient length of time for transportation to England.

We claim that by our process we can to a certain extent control the temperature of the cars while in transit, and also hold the fruit in a state of suspense and preservation, preventing it from ripening, and when exposed for sale it will hold up for several days longer, absolutely free from fungus and better than any fruit shipped under cold storage or refrigeration, there being a great preservative quality in the natural carbonic acid gas used in the process. The temperature in the car is not reduced so much below that of the atmospheric temperature at the point of destination that it is caused to sweat, as in the case of exposing fruit to the natural air from cold storage. The salient feature of our process is to keep the fruit at its normal temperature so it is not exposed to so great a change as is the case when it is taken from refrigeration at a temperature of 45° and exposed for sale in a temperature from 80° to 90°.

It is useless to add that the process should reduce the cost of transportation fully one half.

No one being present who could throw any further light on the subject, that and the Perkins process were continued for discussion until the afternoon session.

FRUIT SHIPMENTS.

By P. E. Platt, of Sacramento.

It will not be denied by even the most credulous or the most sanguine that the business of shipping and disposing of California deciduous fruit in the East, as at present and for some time past conducted, is most discouraging to the producer. More than that, the very existence of this grand and growing industry is threatened, and must come to an end unless a decided improvement can be made.

With all due respect to the few commission shippers who have made a fortune out of the business, and who will continue to make money as long as the fruit intrusted to them brings the freight charges, it still remains true that the business is a disastrous one, and that it is in very bad shape. And yet it cannot be said that every one suffers who touches the business. Quite the contrary. A number of good and deserving people are quite considerably benefited.

Let us see. The men who plow and cultivate the orchards for the grower get their wages all right; the pruners are paid for their work; then some considerable money is paid to the men who furnish expensive washes for the trees, and to those who apply them; later the fruit must be thinned, and this furnishes labor for an army of wage-earners, who look to the grower for their money; finally, the fruit is ready to pick, and that work puts more money into deserving hands; then the box factory makes a profit, and expects its bill for boxes to be paid, first for the picking boxes and then for those to ship the fruit in. Paper to wrap the fruit in costs money, and is a very important item. The packers come next, and a large gang of autocratic coolies dictate how many hours they will work, and how much fruit they will pack for $1 25 a day. (It is fair to say, in passing, that white men and women can do this work, and in the near future will, I believe, do it all.) After the fruit is packed the grower must haul it to the cars, and this costs him time and money; then a new set of hands receives it, and the producer pays them to load it in the car. He pays a commission man at this end of the line a percentage to ship the car, and another one at the other end a percentage to receive it. Arrived at the destination the fruit is turned over to an auctioneer, who makes a profit and enables the auction house to declare a suitable dividend to the stockholders at the end of the season. The auctioneer sells it to a jobber, and he in turn makes a profit when he sells it to the retailer, and the retailer, some claim, makes another profit equal to all the others when he sells it to the consumer. Of course the principal items of expense remain to be mentioned—the railroad and refrigerator charges—both of which amounts when paid help to gladden the hearts of thousands of hard-working employés, besides comforting the treasury of the corporation.

Thus it will be seen that everybody but the owner of the fruit—the producer—gets a benefit. I take the ground that he also should by rights get something out of the fruit. Hundreds of carloads of the finest fruit California ever produced, shipped the past season, have left the grower in debt.

I do not believe that any better results than the past season has shown can be looked for, so long as the present methods of shipping and selling are continued. I do not wish to be considered as attacking the commission men or shippers. I know from an experience as a fruit shipper, covering the entire time during which California fruit has been shipped, that there are honest, hard-working commission men in the business, both here and in the East. There are also dishonest men in the business, and this is true in all lines of industry. But it is the system that is wrong, and which should be destroyed and a new one devised to take its place.

Primarily the grower is the only man interested in the whole matter, and yet he is apparently the only one to sleep on his rights and opportunities. Every one else is wide awake and active. But the grower quietly says, "Take the fruit and do the best you can for me." Fifteen or twenty shipping concerns each send out from one to thirty or forty rustling men to secure the handling of the fruit, and perhaps it is not to be wondered at that the grower, besieged as he is daily in this way, gives up under the pressure.

It is not, however, the purpose of this paper to dwell especially on the dark side of this question, or to emphasize the deplorable conditions that prevail, but rather, if possible, to lend some assistance in finding the remedy. And this, I think, can only be through a thorough and complete organization of the growers. Some may say, "I will not again ship my fruit East, but will sell to the dealer, and let him ship it." What value has the fruit, and who will buy it while present conditions prevail? Others may say, "We will dry the fruit." Suppose all do that, and a large surplus stock results, what will it be worth?

The fact remains, that with the enormous product of our orchards already in bearing, and with the vast increase from year to year of young orchards, part, at least, of the crop must be shipped in a green state. And this work the growers must do themselves.

I believe the work of making a complete organization for this purpose can easily be accomplished. In Southern California it has been most thoroughly done, and 7,000 carloads of oranges will this year be handled and controlled entirely by the growers themselves, through their directors and salaried managers.

While it is true that, owing to their more perishable nature, the deciduous fruits of the North must be handled in an entirely different manner from oranges, yet the mere matter of the organization can be made on the same or similar lines as adopted by our Southern friends. The organization may be the same, but its work would be different.

Very briefly stated, the growers in each fruit district form themselves into associations, with their regular officers, Directors, Secretary, and Manager. These various associations group themselves naturally into local exchanges, each association being fitly represented. To illustrate: In Central California, exchanges would be established at Sacramento with perhaps a dozen local associations in it. Others would be formed at Newcastle, Placerville, Marysville, Vacaville, Stockton, San José, Fresno, and perhaps other points, each exchange consisting of as many associations as the territory tributary required. These exchanges all to be represented on a general Executive Board, which would have full control of all business of the exchanges. In this connection I quote from a paper I wrote a short time ago:

"These associations should be organized on the same basis and for the same purpose, and every grower belonging should be bound by a contract which would give his association absolute control of the fruit. The association itself, in turn, should be bound under contract to the local exchanges, and the local exchanges again to the General Executive Committee. Once the organization is perfected, it would consist of a general exchange, with an Executive Board, a President, Manager, and Secretary, who would have absolute control of all the shipping fruit belonging to the various members. The management would have power to make contracts with Eastern auction houses and fruit dealers. It would be kept advised every day as to the condition of every market in the United States, and having control of the fruit, would ship only as much as the markets would take. The General Manager would be informed also as to the quantity of fruit that each association desired to ship. If the aggregate amount of shipments were in excess of the quantity needed to keep the markets in normal condition, he (the General Manager) would reduce the amount that each association might ship, making the reduction on a pro rata basis, figured on the quantity produced by each association. He would also in naming the amount that each association might ship be guided altogether by the amount which each one had, giving each its proper proportion. A report of each sale should be made direct to each association, and each individual grower's fruit should be sold on its own merits. In this way only could proper reward be given to all the growers for selecting and packing their fruits with care and proper regard for quality.

"An organization of this kind should be formed by the growers on an absolutely unselfish basis. There should be but one ax to grind and that should be, to obtain the best results for the producer at the least possible expense. An organization formed by one individual firm or special body of fruit growers for their own interests would fail of the purpose aimed at. Nothing short of an organization which contemplates the entire handling of the business by the growers themselves under business-like forms and methods will ever amount to anything. By this I do not mean that it will be absolutely necessary to dispense with all the machinery that is now in operation, especially in the East. The growers certainly are capable now of putting up their fruit in proper shape and forwarding it out of the State, and commission men should be employed only at the other end as receivers, and, even then, it is my opinion the growers should be represented by one of their own number at all times in every leading market in the East."

Assuming for the purpose of this paper that the deciduous fruit for Eastern shipment was all under one control and subject to one management, let us briefly consider the advantages of such an arrangement and contrast the results with those obtained under the present method.

First of all the expenses would be greatly reduced. All supplies, such as boxes, paper, nails, etc., would be bought in large lots from first hands and at considerable saving. These would all be furnished to the growers through their respective associations at cost prices. Again, the work of loading cars would be performed by each association, and of course, at absolute cost. Another item at which a great saving of expense would occur would be in operating expenses. Under the present system each of the fifteen or twenty shipping concerns duplicate the expenses of the others, each having a separate office force and a separate manager in charge of packing, soliciting fruit, etc., all of which costs a great deal of money and which could be reduced to one set of expenses instead of fifteen or twenty, as at present. A large amount of money also would be saved to growers in commissions, as the organization would be in a position to deal directly with houses in the East, and by presenting a large amount of fruit could of course command the best possible service at the lowest possible rates. In commissions alone the saving to growers would, in my opinion, much more than cover the entire working expenses of the organization. In various ways besides those enumerated above much expense and loss could be saved. It is not at all improbable that a large reduction, both of freight and refrigerator charges, could be made were the transportation companies able to deal with one large concern like the organization proposed, handling a vast quantity of fruit.

Secondly, in the matter of intelligent distribution of the fruit. The various shippers who are now handling fruit hold no communication with each other, and each is in absolute ignorance as to the quantity the others are shipping or to what market any fruit is going except what he ships himself. The result is that some markets are glutted while others may be without sufficient supply. And again, under the present method, it is a well-known fact that not over twenty or thirty different markets are reached by direct carload shipments. There are, however, about one hundred and twenty cities in the United States having a population of over twenty-five thousand people, most of which cities never received a carload of deciduous fruit from California, and most of them, it is fair to suppose, could use the fruit to just as good advantage as those to whom shipments are made. If the Northern and Central California Fruit Exchanges were in full and successful operation, those markets would be supplied, thereby lessening the quantity that would be shipped to certain other markets, relieving the over-stock and securing better prices. Some have suggested that this distribution can be arranged and regulated by an agreement on the part of the present shippers; but I am firmly convinced that it is not a combination of fruit dealers that the growers require for their protection and betterment.

In the third place, restriction of shipment to conform with the requirements of the markets would be made if the growers themselves were shipping the fruit. The ordinary commission shipper naturally has but one object, and that is to increase his business. To do this he must solicit fruit for shipment, and the more he gets the larger his business becomes. So long as the fruit brings freight charges he is safe, no matter what becomes of the producer; the temptation, therefore, is always in the direction of urging consignments, when perhaps the best thing the grower could do might be to dry his fruit or dispose of it in some other way. An organization such as that proposed would not be tempted to urge shipments unless the market justified. It may be a broad statement, but I think it is true that more money would have been realized during certain months of the past season for the producer had one half of the fruit that was shipped been allowed to rot on the trees, and the remaining half only sent forward.

Fourthly, it will scarcely be denied that a vast improvement could be made in the method of handling the fruit in the East. Take the auction scheme, for instance; in a great many small cities I think the plan should be abandoned altogether. It is too easy for the buyers to combine. In some markets at the present time where auctions are held, the plan amounts to nothing more than exposing the fruit on the sidewalk and the receiver selling it off to any one of the dozen or so buyers who will take it; it would more properly be called a sheriff's sale than a public auction. It is, of course, a very easy and simple way of disposing of fruit, but it is nearly always disastrous. In such large markets as Chicago, New York, Boston, Philadelphia, New Orleans, and perhaps one or two others, the auction plan might be made to work to the satisfaction of the California grower, were he himself conducting or directing the method of such auction, which no one will deny he has a perfect right to do, and ought to do in his own defense. At present in Chicago there are four auction houses selling California fruit. While it may be necessary or advantageous to have half a dozen or more receivers in Chicago, yet there can be no advantage whatever, but quite the reverse, in having more than one auction-room; even in that large market there are not to exceed four hundred buyers, and when they are divided amongst four houses the result must be apparent. If they can be brought together the result will make itself felt very strongly in our favor. Eastern dealers, excepting of course those directly concerned with the trade, have little or no interest with the California producer, their only object being to obtain the fruit for as near nothing as possible, hence they have no compunction against buying peaches at 30 or 40 cents per box which they could sell at a profit if they paid $1 per box or more. The deal should be handled if possible in such a way as to get the $1 instead of the 30 cents. A competent representative of the association should be stationed at each important market to watch after its interests, and to keep it fully advised as to actual conditions and prospects.

In conclusion, I think the time has come when the growers must awaken to a realization of their condition, and must take immediate and energetic steps for the preservation and improvement of the fruit industry. I am free to say that after studying the question for twenty years both as a fruit grower and shipper, I can see no plan, except that of a complete organization, which can successfully grapple with the problem. But it is for the fruit growers themselves to take up the subject and see what they can do.

The following paper on Pecan Culture, by Herbert Post, of Fort Worth, Texas, was read:

PECAN CULTURE.

By Herbert Post, of Fort Worth, Texas.

To the Honorable Secretary of the State Board of Horticulture of California:

Dear Sir: Through the kindness of John Benson, Esq., of San Francisco, I have received a copy of the fourth biennial report of your Board for 1893. I was very glad to receive it, for it contains much of great value to others who are outside of California but interested in horticulture, one of the greatest professions man ever followed. Especially was I interested in the discussions on the pecan nut, on page 330.

Mr. Benson has asked me to state what I would have said had I been present at this discussion, and been called upon for information concerning the pecan tree and its great value.

Such discussions are valuable, and it is very evident those taking part were seeking information, and if I add but a mite to the knowledge sought upon this important industry, I will feel well repaid.

An old Italian saying is, "An olive orchard is a gold mine on the face of the earth." If such be true of the olive, it is vastly more so of the pecan, especially of the Texas thin-shell pecan. With cultivation they begin to bear at six years (so do some growing wild); at eight years they bear profitably. As soon as they bear fifty pounds per tree, twenty-five acres, costing but $75 for the nuts to plant, will earn $7,625 annually, going on increasing in yield for thirty years, lasting for generations. A hardy tree, with few or no insect enemies, we have in the pecan a friend famous for its earnings in lifting mortgages and bringing comfort and happiness to thousands, who have only lately come to know of its great value.

Having made this valuable industry a special study for nearly five years past, and in consultation with our best informed horticulturists frequently upon this subject, what I have to say will be indorsed by such men, some of whom have spent most of their lives in this State. Professor Stelle (now deceased), who was for many years connected with the Geological Survey of the State, visiting every part of it, made for twenty years a study of the pecan, and to him we are indebted for much valuable information. With pen and voice he has tried to interest the Texans in this valuable industry, who seemed to care but little for it, but went on year after year wasting wantonly the valuable forests of the pecan, simply to gather the product. Happily, two years ago our Legislature put a stop to this, making a severe penalty for those who cut down the pecan, or even gather the nuts without permission of the owner. The question has been asked by people outside the State, "If the pecan is so valuable, why don't all Texas go into growing them?" My answer is, people in a new country like Texas are so busy getting bread and meat that they have little time or care for anything else, especially so when they can go out and in a few hours gather all the pecans they want. With them that ends all the interest they have. It is like asking the people of Pennsylvania to plant chestnuts, while the woods are full of them and supply the demand.

Attention has been called to this industry the past three or four years, and it has induced a few to plant out groves, with promise of large earnings and with increased value of the lands devoted to them.

Cultivation of the thin-shell pecan has largely increased their yield, their size, their quality, and flavor of the nut, and every such endeavor has increased confidence in its future, and the pecan will lead the list of the valuable nuts of the United States. For instance: I know of one wild pecan tree which is situated in the bottom along one of our rivers, yet hundreds of feet away from the water, but in a cotton field which is cultivated every year, that has borne nuts for six years in succession and earned its owner an average of over $50 per annum. This tree has had no care but the cultivation of the crop under it. Another tree here within the city limits but fifteen years old, year before last the owner says bore eleven and one half (11½) bushels of fine large pecans.

In the discussions of your Board are some statements made which need correcting. On page 331, Judge Heath says, speaking of Texas and Louisiana: "Wherever you find the pecan it is on the river bottom, next to the water, where it stands with its roots in the water." "You will never find any of these trees prospering except close along side of the river bottom, or where the river overflows the bottom land. There they grow luxuriantly."

Mr. Williams also says, speaking of the pecan in Texas: "They grow there with the roots submerged in water for three or four months of the year." My answer is, as far as these gentlemen go they are correct, but by a little inquiry or observation they would have other facts, which would have been helpful. How came those pecans growing on the river bank? None of them were ever planted by man's hand. Years ago they were washed down the streams and were lodged in the overflow of the banks. The next rise of water carried other nuts farther from the banks, they took root where they lodged, and so on as the higher waters carried the nuts still farther away these also found lodgment in mother earth, perhaps a half mile away from the river bed, and these trees are bearing nuts in as great abundance as those on the river bank. These trees have had no surface water near them it may be for years, except from the rains. The streams in Texas rise rapidly and as quickly go back to their beds, and only exceptionally do they spread far from their banks. The secret of their growth is, the soil is alluvial and the tap-root, which is the life of the tree, goes for moisture even if twenty feet deep. This the pecan will do if a thousand feet from the water in the stream. Also, during the summer the beds of most of our creeks and rivers are dry, yet it seems to make no difference with the pecan, on the banks or farther away.

The statement made by the gentlemen leaves the impression that to make a successful growth, the pecan roots must be *in the water* close along the bank. Such is not the case. To all appearance and results of crop, those long distances away seem to thrive as well as those on the river bank.

So far as I know, with here and there an exception, man has had little or nothing to do with the planting of pecans here. Nature has done most of it and the pecans have grown along the streams where they were left by the water. Experience shows that no wild nut-tree responds more generously to cultivation and care, and where they have been planted in groves promise grand results, especially so where the land is cultivated in crops, the cultivation of which benefits the trees. A great deal has been learned about the pecan within the past eight years, since Judge Heath stopped at San Antonio, all of which is in its favor.

Judge Heath says also: "I do not think they will ever be profitable as nut-bearing trees, for the reason that the pecan does not drop its fruit. In Texas and Louisiana along the Mississippi River bottoms, the trees are cut down or the nuts are beaten off by negroes or the poor white men, and the nuts are collected in that way."

Judge Heath is mistaken about the pecan not dropping its fruit. Our frosts are late, usually not until November. The second frost will clean the tree of all sound nuts. The reason why the nuts are beaten off is this: The gatherers make good wages and commence gathering as soon as fit (even before), and rush them into market, as the earliest gathered bring better prices than later when more plentiful. Another reason is the Eastern and Northern markets want the pecans for the holiday trade, which is the best trade of the year. There is great inducement to gather early, for the gatherers can, during that season, earn enough to support themselves for a great portion of the year. The cutting down of the trees is now prohibited.

Mr. Williams says: "Of the Texas pecan, not one in ten thousand will produce nuts like the nut planted." Professor Stelle says: "Of the Texas thin-shell pecan, fully 90 per cent (if not 100) will come true to the nut planted." How doctors will differ!

Regarding planting the pecan where the tree is to stand, experience of our best growers (a fact developed only lately) all tells them that transplanting the pecan tree and cutting the tap-root is a great mistake, and they with one accord say: "*Don't cut the tap-root.*" I am well aware that Judge Heath and many others who have done so have a beautiful shade tree and also an unfruitful tree; that is, while they may bear a few nuts their greatest value as a nut producer is gone.

Professor Stelle says: "I have planted out such trees, and when seven years old have dug them up, and not a semblance of a tap-root added to the one planted. The trees had dwindled along, made but a sickly growth, while trees on the same ground raised from seed, planted where they grew, were vigorous and thrifty, and though three years younger, were much larger than transplanted trees."

DISCUSSION ON PECAN CULTURE.

Mr. H. A. Brainard: I have observed the growth of the pecan in Mississippi, Louisiana, and Texas, and I have given the matter study for several years here, and I find that as a general thing pecan culture is not a success in California. I know of trees twenty years old that have not borne twenty pounds of nuts in all that time. But I believe that there are some sections in which pecan culture will be a success. I was remarkably struck in passing up the Feather River, above Marysville, with some low land lying between the orchards and the river, that I believe will be excellent for pecan culture. The pecan will not do on our ordinary dry lands, no matter how level, no matter how deep the soil. You will find the nut in the section known as "The Willows," near San José, where the soil is twenty feet deep—a deep alluvial sediment, as they call it—and yet the trees do not bear. I have never seen any trees doing well in California except those planted on moist river bottoms.

Mr. Buck: I wish to say a word about the pecan. We have a place on the road that goes up the valley from Vacaville that has pecan trees on it. I don't know how they were planted—whether they are seedlings, or whether the trees were planted. They are about eight years old, I should judge. They had quite a few nuts on last year, and some of them seem to be full this year. They are on dry land. There is no water near them except that which is probably in the under strata of the soil. But they appear to be doing well.

Mr. Wilcox: It is claimed in this paper that seedlings do not produce their kind. This takes place with almonds. Few peach trees will bear true to seed. There is perhaps something in the statement that if the tap-root is cut off the tree will not bear. I am reminded that the black walnut of this State grows under circumstances similar to those required for the pecan. There is a place called Walnut Creek, in Contra Costa County, where the black walnut grows on the bank of a stream and the roots are fifteen or twenty feet from the water. These trees have no tap-root. In Santa Clara County I know of no pecan trees that are not from the seed. But they do not bear unless water is near the surface. If we should plant on the borders of streams I think we would succeed. I would not despair of obtaining fruit until I had tried it under favorable circumstances.

NICARAGUA CANAL.

On motion of Mr. Berwick, the State Board of Horticulture was directed to transmit the resolution favoring the Nicaragua Canal to the President of the United States and to every member of Congress, as speedily as possible.

Mr. Sprague moved that our congressional delegation be requested to urgently present the matter of the construction of the Nicaragua Canal before Congress, and also to urge upon them the policy of the foreclosure upon the Central and Union Pacific roads. Carried.

VOTE OF THANKS.

On motion of Mr. Berwick, the thanks of the convention were tendered to the State Board of Horticulture, and to B. M. Lelong, Secretary thereof, for the able report of 1893–4.

Mr. Block offered the following resolution:

> *Resolved*, That the thanks of this convention are hereby tendered to Captain Weinstock for the interest he has taken and the efforts he has made on behalf of the fruit growers of California.

Mr. Fowler: Mr. Weinstock has at his own expense assumed the preparation of all the documents which are to be forwarded. He is an active and valuable member of the most important committees. I heartily favor the resolution.

Carried unanimously.

OLIVES WITHOUT IRRIGATION.

Mr. Lelong: In the report for 1893–4, in the proceedings of the last convention, mention is made of an article that appeared in various papers discouraging the planting of the olive, etc., and attributing the statement to me. In connection is my denial of the same. Mr. John S. Calkins, of Pomona, was by some misunderstanding mentioned in the clippings referred to as the author. Since then I find that Mr. Calkins had nothing whatever to do with the article, and the mention of his name does him a great injustice. I make this statement in justice to Mr. Calkins, whom I have known for many years, a most genial and estimable gentleman.

THE QUESTION BOX.

Question, "*Can we afford to continue to rent our orchards to Chinamen?*"

There was a general response of "no," without a dissenting voice.

Question, "*Is there a parasite for the clover mite?*"

Mr. Craw: The clover mite is also the red spider. The beetle was referred to yesterday as being a parasite for the red spider.

Mr. Sprague: I would say that the clover mite is classified as being quite distinct from the red spider. It is a yellowish-green insect, and while it spins a web a great deal like that of the red spider, and resembles it somewhat, yet it is very distinct from it.

Question, "*Can English walnuts be grafted with success?*"

Mr. Block: With proper care, yes.

Mr. Brainard: They can be grafted by using a special method. You must use the ring graft. You must have your stock and cion about the same size. Take a ring of bark out of the stock and a ring of bark out of the cion and put it in place on the stock.

Mr. Lelong: I have never had much success in ring bark-grafting. I find the common cleft graft is best. Mr. Rock has had a great deal of experience in that line.

Mr. Brainard: I have seen it done by Mr. Gillett, of Nevada City. He has grafted over old trees, and almost invariably with success, while others have tried it in the old way and have not succeeded.

Mr. John Rock: It is a well-known fact that walnuts have been grafted for the last hundred years in Europe, and in California, too.

A Voice: What is the best method?

Mr. Rock: Any kind.

Mr. Lelong: Will you explain how your cleft grafting is done, and the condition of the stock and cion?

Mr. Rock: It is like any other grafting, only you must be more particular how you do it. There is perhaps less than 40 per cent that I put in that do not grow. In selecting for grafting, you want to select wood that is well matured and has little pith in it. In cutting your cions it is always best to cut a bead on one side. Take very little wood off on one side and cut right into the pith. Any book on grafting will tell you how to do it. It should not be done carelessly, as we often see grafting done on old trees. It is not so successful on old trees as on small trees in the nursery.

Question, "*What is the outlook for the olive industry?*"

Mr. Frank A. Kimball: There is so much to say upon that matter that I hardly like to speak upon it, as the time of the convention is so short and I feel that I can occupy but a few minutes. I anticipate for the olive the largest distribution and the largest returns of any fruit cultivated in the State of California. I believe it to be a fruit which has in it more valuable qualities and more qualities which are demanded by the people as an article of food than any other one fruit which we raise. The value of olives, pickled ripe, is well known. Experiments have been made in that way by many persons, particularly by our Secretary, Mr. Lelong, and it has been proved that a pound of olives, pickled ripe, is a full food equivalent for a pound of good meat. A family which has a dozen olive trees growing in their dooryard or on their sidewalk have within reach the equivalent for a good food store every year. A portion of the fruit can be made into oil at home, and you need not have a mill to do it with. It can be done easily at home, and the family may thus be supplied with an equivalent for butter. It is even a better article than butter can be, unless that butter is produced at home. It can be used upon every article of food where butter is used, and in every possible culinary operation in which butter is used. It will fully take its place. There is nothing for which butter is particularly and peculiarly adapted that it does not find its equivalent in olive oil. We use it in San Diego County, where the first olives were planted in 1776, and from which all of the olives of the State have been grown. I have seen one of those trees from which 192 gallons of fruit were picked at one crop. That fruit, pickled and put upon the market, sold for $152 under the tree where it was picked. Of course that was an extraordinary crop from an old tree. But we can produce those trees in from twenty-two to twenty-five years instead of a hundred and twenty years. And here is something that it would be well to understand. The tree as ordinarily purchased from the nursery is a dangerous tree to purchase in many instances, no care having been taken to produce that tree from a bearing fruit tree. That is an important consideration. It is essential. The first essential is that it shall be a regular bearer. No, the first is that it shall be a Mission olive. This I am only saying from my own standpoint and from the experience of nearly a quarter of a century. The second consideration is that it shall be taken from a bearing tree which bears regular crops. The third is that it shall be taken from a tree that bears a fruit of proper shape; not a pointed fruit, because a pointed fruit is liable to puncture the fruit adjoining it when it is pickled; but it should be a cylindrical fruit with both ends oval. Now as to the distribution of the olive. We have olive land from the north to the south of this State, particularly along our foothills. Valley or moist land is not well adapted to the production of the fruit. On such land it makes a large amount of wood and sometimes a large amount of fruit, but its quality does not compare with that of the well-drained foothill land, neither does the olive keep as well, neither does it contain the amount of oil, nor is the oil of a quality equivalent to that grown on the foothill land. I strongly recommend the planting of the olive over the entire area of the State in the foothill land, possibly to an elevation of 3,000 feet or more. The tree may be acclimated to a high elevation, as we well know that in Syria the olive is oftentimes picked when the snow is two or three feet deep and has to be trampled down with the foot before the olives can be picked. There they use them not as we do. They do not pickle them as we do, but they dry them, in many cases putting a little salt with them. And now in this State the experiment is being made in many places of drying the olive, to be used as a table fruit, the same as raisins are used. It is a very strong fruit. When dried the bitterness leaves it to a great extent. I may say that when the fruit is taken from the tree ripe, or even green, it is as bitter as the gall of bitterness and the bond of iniquity. This bitterness nearly all leaves it when dried, and it is all taken out by the process of pickling. That process has been well explained by Mr. Lelong, in, I think, last year's published report of the olive convention, in a very elaborate essay, which takes up not only the pickling of the olive but the packing in boxes and other processes of treating the fruit. I would recommend to every one to apply to the rooms of the State Board of Horticulture for copies of that publication. It is exceedingly interesting. It also contains essays from one or two previous reports, referring to the medicinal qualities of the olive. In the report for 1889, I think, there are nearly a hundred pages devoted to the olive question. I would recommend every fruit grower who has land adapted to olive culture to procure a copy of these reports and become familiar with the production of the fruit and the market for it. There are few mills in the State. Mr. Ellwood Cooper, President of the State Board of Horticulture, has a large mill, but I think this year he only presses his own olives. And Mr. Goodrich, of Quito farm, of Santa Clara County, has a large mill.

A VOICE: I would like to ask Mr. Kimball if it is safe to put out olive trees in valley land where you have to go fifteen feet to water.

MR. KIMBALL: Entirely safe. Only the tap-root will penetrate to that depth. The roots of the olive tree are largely superficial roots. They must be near the sun to produce the best fruit and the largest amount of oil.

A VOICE: Is it safe to put out trees where you have to go one hundred feet to water?

MR. KIMBALL: I think it is safer. But if you have a hardpan soil you must break up the hardpan with dynamite. First drain your soil. If it does not drain naturally it must be drained artificially.

MR. DORE: I would like to ask Mr. Kimball with reference to the planting of olives upon land somewhat affected by alkali.

MR. KIMBALL: I have planted olives on land considerably affected by alkali. I commence at the tree and back furrow toward the tree two or three times, say within three or four feet of the tree, and keep back furrowing to the center of the line between the two rows of trees, leaving the center that much lower, so that the alkali may be washed off to the lower level. I am not opposed to a reasonable amount of alkali in the production of the olive. Our mesa lands have, in a general way, so much alkali, that when they are irrigated you will often see the alkali come to the surface of the ground. But by plowing the ground in the way I have described the alkali is washed to the lower level and the tree is protected.

Mr. Sprague: Do you irrigate your olives?

Mr. Kimball: I have not until the past year. Small trees, one, two, three, perhaps four years old, will get along on almost any of our dry land, no matter how deep it may be to water. But I wish to impress particularly upon the fruit growers of this State that the olive tree, if the cuttings are taken from bearing trees, will pay all expenses the third year. One more thing in the raising of the olive tree. In many instances people have lost 75 per cent of their cuttings. I have made many experiments with cuttings, and my most fruitful ones have been by taking the long limbs of the trees. In planting I plow furrows, making my rows from sixty to eighty rods long, and laying the limbs down horizontally in the furrows and then turn another furrow over them of about three or three and a half inches in depth, and covering those limbs. Those limbs throw up canes, and strong canes, too, perhaps once in two or three feet. The next year they throw up more canes. The second year I take out those that come up first, taking a carpenter's gouge, and after removing the earth from around the cane, with two or three blows on each side I take out a small piece of the cutting together with the roots. They have a well-established system of roots. I have often taken from twenty to thirty gallons of fruit from trees that have only been planted four years back.

(Recess until 1:30 p. m.)

AFTERNOON SESSION.

[Vice-President Buck in the chair.]

THE QUESTION BOX—(RESUMED).

Question, "*What is the experience of fruit growers and shippers who have used the Stephens patent fruit carrier in shipping green fruit, as to its advantages and merits?*"

Mr. Block: We made a trial of some of them, and I think with good fruit, well-colored fruit, and fruit of good size, there is an advantage in it. If you want to put poor fruit in it you had better keep your poor fruit at home or throw it away.

Mr. Brainard: I have talked with a good many men who have used it to a limited extent in Santa Clara County, and they tell me there is an advantage of somewhere between 25 and 35 per cent, provided only fine fruit is used.

Question, "*Will fruit seed reproduce the characteristic root and stock growth of its parent, or will its reproduction be a chance?*"

Prof. Hussmann: I thought that matter was long ago laid at rest. We all know that raising seedling fruits is a chance, and that some certain classes of fruits offer greater chances for reproducing the same kind than do others, but that you can never depend with certainty upon what a seedling may turn out. Certain families or classes of fruit, as for instance, yellow-flesh peaches, are more apt to come nearer the original than white-flesh peaches.

Mr. Motheral: Why?

Prof. Hussmann: That I cannot tell.

Mr. Motheral: Have you ever examined the blossoms to see the difference?

Prof. Hussmann: I am not prepared to answer that question, because you find similar blossoms in white-flesh peaches and in yellow-flesh peaches. If Mr. Motheral can enlighten us on that subject I would be very glad to hear from him.

Mr. Motheral: Nature has tried to prevent the fertilizing of any fruit with its own pollen. The Bartlett pear in some sections of the country is comparatively barren to its own pollen. And in the East they have had to graft in Winter Nelis on other varieties of pears to get a crop at all. The fact that some varieties of peaches reproduce themselves nearer the originals than do others, occurs from the difference of the bloom and the time that the pollen ripens. In some varieties the pollen ripens at the time fertilization takes place. It cannot fertilize until the pistil is in the right position. If you will investigate any variety of fruit that reproduces itself from the seed you will find in the conformation of the flower a reason. The Government has spent a good deal of money in investigating that question, and has issued bulletins upon it at various times.

Question, "*What is the best and cheapest way of treating the San José scale?*"

Mr. Motheral: Living in the country where we first used the remedy that has proved absolutely successful, perhaps it is proper that I should say something on this subject. There was an Australian sheep man in Fresno County who was dipping his sheep near a ranch belonging to a man by the name of Coleman, and when this sheep man was dipping his sheep a fruit raiser complained that his peach trees were dying from the scale. The sheep man told him to go to his place and get some of his sheep-dip, because he said the scab in his sheep was an insect and he said the sheep-dip killed the insect, and he said, "I tell you it will kill the devil." [Laughter.]

A Voice: Do you believe it?

Mr. Motheral: If I did I would apply it broadcast. [Laughter.] And the fruit grower applied it and it cleaned his orchard, and left his trees more vigorous than ever before. It came to the knowledge of Mr. Thomas, who was at that time a member of the State Board of Horticulture, and in that way the knowledge was disseminated. The dip is composed of lime, sulphur, and salt. I don't believe the salt has anything to do with it, except that it makes the wash stick to the trees better.

Question, "*Does the San José scale affect the root? Does frost abate it? What is the best season for spraying? What sprayer is most practicable? What solution is most effectual?*"

Mr. Block: I believe that the earlier in the winter after the leaves are off the better for spraying. "Does frost abate it?" That I know nothing about. As to the most practical sprayer, they have so many hobbies on sprayers that I have nothing to say.

Mr. Motheral: It depends upon what you want to accomplish by spraying. There is a little worm imported into this country called the "strawberry-root borer." It has attacked our peaches. He lays his egg in the cross of the tree. If you spray early with lime, sulphur, and salt you don't catch him; but if you will wait until just after he has come out you never fail to kill him, and you kill everything pertaining to curl leaf. You kill this scale and you kill the curl leaf.

Mr. Dodson, of Shasta: I have had some experience with this dip mentioned, both on prune trees and on Bartlett pear trees. My experience is that it not only kills the scale, but it seems to act as a fertilizer to the tree. The past season I sprayed prunes early in the spring. Those which I sprayed produced more and larger fruit than the trees which were not sprayed, and it almost entirely eradicated the scale. Late in the spring I sprayed the orchard of a neighbor of mine when the pears were as large perhaps as three peas. There was a question in the community as to whether or not the dip would injure the fruit, and I examined the fruit after it got as big as a quail's egg, and I could see the spray in the blossom end of the fruit, and it showed that it had not injured it in any way, shape, or form, and that orchard is nearly clear of scale.

Mr. Block: I will give my reasons why I advocate early spraying for the *Lecanium* that attacks the apricots and in many cases the prunes. I used sheep-dip early in December on my trees, and destroyed the scale effectually at that time. I believe in staying by what we have found to be beneficial. I don't like to be making so many experiments. And I know that it has a good effect if applied early. I don't want to be experimenting in April or May to know what effect it will have then. Now, in regard to the effect on curl leaf. The early wash has quite as much effect on curl leaf as the late wash. In reference to the borer, I know nothing about it. For that purpose it may no doubt be better to spray later. No doubt my friend Motheral has had valuable experience on that point. But with that exception I should recommend the early wash.

Prof. Hussmann: I would like to ask Mr. Block if that wash which he uses has any effect on the codlin moth?

Mr. Block: I should say not; I don't know. I have never depended on it for the codlin moth. I depend on Paris green for the codlin moth.

Question, "*What is to be done when the individual's orchard is affected by San José scale, and he is too poor to treat it?*"

Mr. Block: I would answer that he should become rich, and treat it by all means. [Laughter.]

Question, "*What is to be done when a community is too poor to properly treat the ravages of the San José scale?*"

Mr. Block: The community should move. [Laughter.]

Question, "*What course should be pursued when a man is able but unwilling to treat San José scale?*"

Mr. Block: He should be made to get out of the community. [Laughter.]

Question, "*In sections where the San José scale is prevalent, what protection should be taken by those whose orchards are free from it?*"

Mr. Block: Spray.

Question, "*What is recommended as a fertilizer for pear orchards? For plum orchards? For cherry orchards?*"

Mr. Motheral: Those may seem to be unimportant questions, but they are not. If we continue to constantly take from our orchards and put nothing back we will soon have to begin to fertilize, as they do in the old country. The ordinary fertilizer is expensive. I have been trying an experiment with the Southern pea vine. We grow a large crop of vines and then turn them under while they are green. It is the best and cheapest fertilizer that I know anything about.

Mr. Lelong: I would like to state for the benefit of the convention, that the State Board of Horticulture printed a bulletin giving the result of experiments with different species of fertilizers. That bulletin can be had by addressing a letter to the office in San Francisco.

Mr. Motheral: I am asked where the seed of the Southern pea vine can be procured. You can get them in San Francisco. There is a pea grown in the northern part of California that is cultivated for the pea itself. If you wish to grow that you can get a crop of peas and it will fatten your hogs in September, and you can turn it under and you have a good fertilizer besides.

Mr. Block: If you find that your land is short of potash, you must fertilize with potash. In order to act intelligently in regard to fertilization, you should have your soil analyzed, and find out what elements are missing. It is no use to spend money buying phosphates if you require potash, and it is no use to buy potash if you require nitrogen.

THE NEXT CONVENTION.

On motion of Mr. Walton, the matter of locating the meeting of the next State Horticultural Convention was taken up.

Mr. Righter put in nomination San José.

Mr. Kimball put in nomination San Diego.

Mr. Black nominated Santa Rosa.

Mr. Scott nominated San Francisco.

Vote being had on the sense of the convention, to be considered in the form of a request to the State Board of Horticulture, the result was announced as follows: 42 votes for San Diego, 9 for Santa Rosa, 1 for San Francisco, and 14 for San José.

Mr. Kimball made a few graceful remarks, assuring the convention of a warm welcome and pleasant time in case San Diego should be selected as the place of meeting by the State Board of Horticulture.

THE QUESTION BOX—(RESUMED).

Question, "*Is it the judgment of the convention that the putting on of expedited ventilator fruit trains to run through to Chicago in five days is all that is necessary to be done in the way of transportation to make the growing and shipping of green fruit to the Eastern markets profitable to the producer?*"

Mr. Block: I, for one, would say no. Other things are necessary. And I will make a motion that it is the sense of this convention to answer this question by saying that more is necessary; that reduced rates are essential.

Mr. Dore: During all the discussion of this question we seem to deal with green fruit only. A person who reads the proceedings of this convention would think that the dried fruit industry, and particularly the raisin industry, is not suffering for want of lower rates. In dealing with the transportation question, it seems to me that it should be adjusted to the proper basis all around.

Mr. Block: This is an important question. If we do not answer it the inference will go abroad that nothing besides expedited trains was necessary. You will remember that in my statement during the argument, I said that I considered a reduction was necessary, but that I said that expedited trains were equally as important, if not more so. And reduced rates are necessary for the dried fruit industry as well as for the green. And I insist upon my motion.

Mr. Sprague: I move as a substitute the following: "While the fruit growers earnestly desire the expedited trains, they do not consider that they will be a sufficient measure of relief, but desire lower rates in general for fruit transportation."

Vote being had on Mr. Sprague's substitute, it was unanimously adopted.

Question, "*Which is the best form of coöperation for green and dried fruit men?*"

Mr. Dore: It seems to me there are a few principles underlying this work which, if rightly understood and carried out, would enable us to avoid some risks that mark the pathway of previous efforts. The recent attempts of growers have been in the way of making close combinations in order that they might get fair prices. They have united men of conflicting interests, as commission men and growers. It has been my idea for some time that we can be successful only by uniting those whose interests lie in the same direction. The fact that the farmers will stand together and organize is frequently referred to. When any coöperative organization is effected upon a plan that is for the interests of every individual engaged in that industry to join it and to uphold it in all proper ways, it seems to me there will be little difficulty in effecting the organization and successfully carrying it out. Any organization that does not as a foundation so arrange its work as to make it solid and conditionally for the interest of those joining it, cannot and will not be successful; it does not matter whether they are farmers or merchants, or what business they are engaged in. Their interests must not conflict.

Mr. Motheral: We have been trying this question with us for some years, but not very successfully. And I am satisfied that you cannot mix up a lot of commission brokers with the fruit men and have your organization successful. I am satisfied that you have got to have your fruit men to themselves. There is one question at the bottom of all this matter which you will have to attend to, and that is the question of money. The farmers are poor. They are not making any money. It is difficult for the dried fruit men to hold their products until there is a market for them. Now, in forming a coöperation with us, the first thing necessary is some plan by which the farmer can get money to gather his crops and hold them after they are dried, without throwing them on the market in bulk and depressing the market. It is merely a question of money. Give me money enough to hold the California crop until it can be properly marketed, and I can get farmers all together without any trouble.

MR. WILLIAMSON: How are you going to get the money to do that?

MR. MOTHERAL: The other fellow gets it. And the farmer manages to get money advanced in some way. I think it is practicable for those advances to be made in a larger way.

A member desired to have the convention consider the Perkins process of transportation.

It was stated that Mr. Perkins had returned to San Francisco, and no one was present who could throw any light on the subject.

[Vice-President STEPHENS in the chair.]

RUSSIAN THISTLE.

MR. SPRAGUE: I would like to inquire if the convention deems it necessary to take any action in regard to the spread of the Russian thistle. I would submit the following motion:

WHEREAS, From the reports given of the Russian thistle, and from information received in regard to its dangerous character, we believe vigorous steps should be taken to prevent its spread; therefore, be it

Resolved, That it is the sense of this convention that the county of Los Angeles, through its Board of Supervisors, should do all within its power to eradicate it and prevent its extension.

Carried unanimously.

PUBLISHING REPORT.

The following resolution was presented and adopted unanimously:

Resolved, That this convention request the State Board of Horticulture to immediately publish the proceedings of this convention as a bulletin, and that the said Board be authorized to state, in our behalf, to the State Board of Examiners, that many of the subjects discussed are of such immediate importance to the horticulturists of the State that their publication ought not to be delayed until the appearance of the Biennial Report two years hence.

VOTE OF THANKS.

On motion of Mr. Buck, the thanks of the convention were tendered to the citizens of Sacramento for their generous hospitality in making everything as pleasant as possible for the members of the convention.

[Vice-President BUCK in the chair.]

MR. STEPHENS: I move that the thanks of the convention be tendered to the Chairman, and to the Secretary and Assistant Secretary, Messrs. Lelong and Smith, for the efficient and courteous manner in which they have conducted the sessions. Carried.

On motion of Mr. Block, the thanks of the convention were tendered to the Vice-Presidents, and to Brainard C. Brown, the official reporter.

On motion of Mr. Stephens, the thanks of the convention were extended to the Sacramento newspapers for the able, full, and complete reports of the sessions of the convention.

The convention adjourned *sine die.*

B. M. LELONG,
Secretary.

APPENDIX A.

CALIFORNIA DRIED FRUITS, AND HOW TO USE THEM.

By Prof. C. H. Allen, of San José, Secretary of Committee.

During the past fifteen or twenty years California has, in many localities, and over large areas, become one continuous fruit orchard. The output of the orchards already in bearing is enormous, and in a few years, when the recently planted trees come into full bearing, this State will be ready to furnish fruits for the markets of the world.

Our great diversity of soil and climate enables us to produce all varieties of sub-tropical fruits, as well as those raised in colder climates. It is unquestionably true that we bring to perfection a greater variety of fruits than any other country in the world; and while the distribution of fresh fruits may be limited by their perishability and by the means and cost of transportation, no such limitations apply to dried fruits, for these, if properly cared for, will keep for years, and they can be easily and cheaply transported to almost any part of the civilized world. The day cannot be far distant when an intelligent people, recognizing the healthfulness of fruit as a diet and its economic value, will eat fruit, fresh and canned, and especially dried fruit, making it an indispensable article of diet. The methods of preparing and cooking herein given are from a practical standpoint, and many of them are so well established that every housewife understands them; nevertheless there are others that are new and will prove of great interest.

KINDS OF FRUIT, AND PREPARATION FOR MARKET.

Our fruit for drying, with the exception of pears, is allowed to ripen on the trees. It is gathered at successive pickings as it ripens.

The principal fruits dried in California for market are apricots, cherries, figs, grapes, nectarines, peaches, pears, and plums. Below is given a brief description of these, with some of their peculiar properties:

Apricots.—Of these there are many varieties, differing in size and quality, especially when fresh; when properly cured they differ mainly in color, size, and thickness of the meaty portion, their flavor not varying materially. They are of an orange-yellow color, and should be soft and flexible, if not allowed to become too dry.

Cherries.—Until quite recently California cherries have been either canned or marketed fresh; but the increasing output of the last two or three years has furnished cherries to dry. Some are pitted, but this requires a great amount of labor, adding much to the cost of production. Unpitted cherries retain the cherry flavor much better than pitted.

Unpitted dried cherries are soaked until fairly soft—from one to five hours, depending on kind and how dry they are. They can be used as follows: Drain them a half hour, then put them on a cutting-board and roll them with a common rolling-pin hard enough to flatten them on both sides, but not hard enough to crack the pits. They can now be readily pitted, making a fruit in some respects better than the cherry pitted before drying.

Figs.—Figs are allowed to ripen thoroughly on the tree. They are then clipped from the stem. After gathering they are dipped in a solution of salt water, and cured.

Grapes.—California sends to market both raisins and dried grapes. When other than raisin grapes are dried they are classed as dried grapes. These and wine grapes are sometimes used to produce a low grade of wine, but they are more extensively used as a very cheap article of food.

Nectarines.—These are prepared in much the same manner as apricots, and are highly esteemed for their peculiar peach flavor.

Peaches.—Peeled peaches are not popular with the trade, hence the greater part of the product is dried unpeeled. California peaches are of superior quality. The skin is thin, the down or fuzz is all or nearly removed in the process of curing, and consumers prefer the flavor of the unpeeled peach.

Pears.—Pears are prepared in three different ways. When well ripened they are halved and cured. Some are cured unpeeled in quarters, while others are peeled, sliced, and cured like sliced apples.

Plums.—The introduction of many kinds of plums and the production of several choice seedlings have given California a great variety of plums. Whatever the flavor may be when fresh, they all (like the apricot) dry and cook sour. Plums are also largely used as blends, to give flavor to other fruits. They are dried either pitted or unpitted.

Prunes.—Nine tenths of our prunes are from the old stock introduced here from France as the Petite d'Agen. It has been so long raised here, and in such quantities, that the State Horticultural Society, by resolution, designated it the California Prune. Closely allied to this are the Prune d'Ente, the Pyramidal, the Robe de Sergent, the Wangenheim, and the St. Catherine. These all differ from the first by being not quite so sweet, or more accurately, by having a little more acid in their composition. Lying in the same direction, yet differing more widely, are the Fallenberg, or German prune, the Tragedy, and the Italian, all being dark prunes; and the Gros d'Agen, or Hungarian prune, which is light red and grows very large, and differs from the others; dries very sour. The Robe de Sergent has attracted much attention; its mild, sub-acid flavor, requiring a little sugar, which enriches the juice very much, makes it a favorite with many to whom the California prune is not piquant enough. There are two light-colored prunes, the Silver and the St. Martin, both of which dry sweet, though the former has a mild, sub-acid flavor like the Robe de Sergent. The Silver prune is large and meaty, and was in good demand until unscrupulous dealers palmed off the Egg plum, or Egg prune, for it. It is to be hoped that fair dealing may again restore it to its proper place, for as fruit food it stands at the head of the prune family.

BLENDS.

By putting together different kinds of fruit it is possible to secure almost any desired flavor—as the quince has long been used to flavor apple sauce.

Taking the full range of our fruits, there is a wide field for selection. The California prune is very sweet, with little other flavor. The Robe de Sergent has a distinct trace of acid. Either of these will be improved for most tastes by adding to them, when cooked, about one eighth of their bulk of plums. They will then require more sugar, but will be far richer than when cooked alone.

A blend of plums and raisins, in about equal parts, is a very acceptable dish, retaining all the good effects of the fruit-acid.

Apricots blend well with almost any sweet fruits, their acid readily permeating the whole. These are especially desirable in jams or marmalades.

The highly colored plums are excellent with dried apples, imparting a richness to both appearance and flavor.

Pears are generally very sweet, and when cooked for sauce require some of the sour fruits to improve them.

Cherries, especially when a few of the pits are cracked, the meats being crushed and put into the sauce or pie, make a distinctive flavor greatly fancied by epicures.

COOKING DRIED FRUIT.

The value of dried fruit as a food, and its acceptability to the palate, are largely determined by the manner in which it is cooked. In the process of cooking, the flavor, the texture, and even the nutritive value may be either preserved or almost entirely destroyed. In too many cases the latter result is successfully attained.

The three rules given below, if followed, will keep any one from going very far astray:

1. *All dried fruit should be soaked in clear water until the moisture lost in drying has been nearly replaced.*
2. *Dried fruit should not be boiled.*
3. *All sugar used should be cooked with the fruit.*

In drying, the tissues of the fruit are shrunken, adhering to each other, and certain chemical changes take place, as shown in the change of flavor. Soaking separates again these tissues, and in a measure re-forms the juice once contained; and while it can never entirely restore the fresh flavor, because of the chemical changes, with some fruits it comes very near to it.

Boiling hardens some of the tissues, breaks up the fruit, changes not only its flavor, but its digestibility. The temperature should never be raised above 180° Fahr. (a low simmer), at which temperature the fruit will cook entirely tender, and at which it may stand for hours without injury.

The saccharine matter contained in fruit is mostly grape, or fruit sugar, which differs from cane sugar in having passed through one step in the process of digestion. Its use is open to none of the objections which physiologists urge against the use of cane sugar. When the sugar is cooked with the dried fruit, instead of being put in after cooking, it is all, or nearly all, changed into fruit sugar. This explains the apparent anomaly that well-prepared dried fruit is more easily digested than fresh or canned fruit.

A convenient way to prepare dried fruit is as follows: Rinse it well in warm water, letting it stand in the water five or ten minutes, stirring it well, if the fruit is at all dusty or "sugared," to make it entirely clean. Put it now into the cooking vessel—preferably of porcelain—with just enough water to cover it, and let it stand several hours—all night if you choose—until it has reached almost its original state, so far as moisture is concerned. It is now ready to cook. Put in any needed sugar, a little more water, and set it on the back of the range, where it may simmer for several hours, or until quite tender.

When prunes are cooked in this way they remain whole and the liquor, poured off, will be clear. The skin will be tender, the pulp uniformly soft and delicious. The "sugaring" above alluded to does not arise, as many suppose, from anything added to the fruit, but is a crystallization of grape sugar on the surface. It is clean and wholesome, but adds little to the flavor.

RECIPES AND SUGGESTIONS.

Having cooked the fruit, as by the directions already given, it is ready to be served in any of the various ways in which fruit is used.

As a sauce, not by the teaspoonful, as a relish, but by the saucerful, as an important and valuable part of the diet, cheaper in proportion to its nutritive value than most of the food used, and far more healthful, especially for persons of sedentary habits and children, than meat.

For pies and puddings, either alone or as blends with other fruit, to which it will impart a delicious flavor.

For fruit cake, for which many of our fruits besides the raisin, are admirably adapted. After being slightly soaked, they can be easily cut to the proper size.

In the detailed recipes below given, although they are each made for a certain kind of fruit, yet in most of them other fruits may be substituted with equally good results.

Apricots.

The apricot is the most tender-meated of our fruits, and it will be sufficiently cooked if prepared as follows: After soaking drain off all the water, add to it the amount of sugar required, and boil until the syrup is thick; then pour over the soaked fruit.

1. Because of their peculiar acid they do not take kindly to cream, which is a great addition to all the other fruits except the sourest plums. When well sweetened they make a good sauce, to be used as a relish without cream.

2. As a pie-fruit they are unsurpassed, many greatly relishing their keen acid.

3. A few apricots mixed with other dried fruits that lack the acid to make them agreeable, add very much to their acceptability.

Cherries.

Dried cherries are mostly used as a sauce, but when prepared as here given, they make a very acceptable cherry pie. They may also be used widely as blends.

Figs.

These make a delicious sauce, very nutritious and wholesome. Soaked a little while, until sufficiently tender, and then cut into thin slices, they are excellent in layer cake, and make a toothsome addition to fruit cake.

Grapes.

Grapes are important as a food only in the form of raisins. They have long been used in pies, cakes, and puddings. Many people also use them to add to the seasoning of the stuffing of fowls—they taking the place of jelly in the eating. The raisin, containing as it does all the nutrition of the grape, is by no means to be despised as a food. Stewed by themselves, or with other fruits as blends, they are a useful article of diet. They may be eaten, as are grapes, in three ways: with both skin and seeds—crushing the seeds, to get the value of the tannin they contain—or by rejecting the seeds, as most prefer them, or both skin and seeds may be rejected, taking only the pulp and juice. Eaten in this way they are a strengthening food particularly suited to convalescents.

The Seedless Sultanas and Thompson's Seedless are valuable additions, saving the tedious labor of "seeding," which many consider necessary with common raisins.

Nectarines and Peaches.

These may be classed together, both widely used as a sauce, and both used as food. The thick, meaty fruit is hearty and makes a good addition to a milk diet. Well cooked, they are as palatable in bread and milk as was the old-fashioned sweet apple. They may be substituted for the prune in the souffle, or may be used as blends with almost any fruit.

Pears.

Pears are exceedingly nutritious, and when well prepared entirely digestible. Almost too sweet for a sauce alone, they may when partially cooked be used in layer cake, or as an addition to the fruit in a fruit cake. With some sour fruit they make good pies, and are one of the best fruits to eat with milk.

Plums.

Plums have, perhaps, less nutritive value than other dried fruits, yet because of their decided flavor, they are very useful as a sauce and as blends. "Plum duff" can be made from any of the varieties, and with a good sauce makes an acceptable dessert dish.

They may be used for pies or puddings, when a keen acid is desired, and when added to mince pies form a good substitute for the old-fashioned boiled cider.

Pitted plums, soaked an hour or two and then cooked in a heavy sugar syrup, after a slight drying, make a fine confection, retaining the plum flavor almost perfectly.

Prunes.

These are adapted to a greater variety of food dishes than any other of our fruits. Entirely acceptable as a sauce, they make excellent pies and form an agreeable addition to almost all kinds of puddings. They may be used with the pits in or can be easily pitted after cooking.

1. All the prunes are palatable as a sauce, especially when cooked with a little sugar, which, even with the California prune, improves the dish by enriching the liquid in which they are cooked.

2. They add very much to any of the batter puddings, and should be placed in the bottom and around the edges of the dish as it is filled with the batter.

3. *Jellied Prunes.*—Cook a pound of prunes until quite tender, but not broken. Take about an ounce of gelatine, soak it in a little cold water until soft, pour into this all the liquor from the prunes while hot. This will dissolve the gelatine. Put the prunes into a bowl or cake-form and pour over them the jellied mixture. This when cooled makes an attractive dish. If a little stick cinnamon is cooked with the prunes it gives a fine flavor.

4. *Prune Souffle.*—Take a quart of prunes, the Robe de Sergent or the Silver prune preferably, cook, sweetening to taste; remove pits and chop fine. Beat six eggs, yolks and whites separately, and pour over the chopped prunes. Bake fifteen minutes in a quick oven. Serve hot.

5. *Caramel Prune Pudding.*—Add to a quart of cooked prunes, while hot, six eggs, whites and yolks beaten together. Line the baking dish with caramel, and pour in the pudding. Bake thoroughly. Serve cold.

Caramel is made as follows: Into a sauce dish put a small lump of butter; when melted put in enough dry sugar to cover the bottom of the dish, say one quarter of an inch deep. Let it cook or burn until it is a rich brown color. When cold it can be taken from the dish by striking it smartly, bottom up, on a cutting-board.

6. *Potpourri.*—A potpourri of dried fruit, of which prunes are the base, is becoming a favorite dish. A quantity of fruit, varying as the flavor desired varies, cooked as herein given, and served with cream, makes an excellent breakfast or dinner dish.

PRUNES AS A REMEDIAL DIET.

A saucer of cooked prunes, without cream, eaten every morning a half hour before breakfast, for a few weeks, will relieve the most severe cases of chronic constipation. The same result will be accomplished, perhaps more agreeably, if the prunes are eaten a half hour before retiring, and they will help to give a good night's rest.

SUGGESTIONS FOR KEEPING FRUIT.

Much of our fruit, after it reaches the retail market, is allowed to become too dry and hard. It is so rich in sugar that it will keep well even if it is not bone dry. Some retail dealers complain of the loss in weight as they handle it. Nor is this to be wondered at as it is too often kept. Allowed to stand in an open box or barrel, exposed to insects and dust, it loses its attractive appearance and also, in part, its flavor. When fruit becomes too dry it will never quite regain its original taste.

Dried fruit should be kept in a cool, moist place, carefully protected from insects, and where no dust can reach it. If it "sugars" and puts on a rusty appearance it should be dipped. This is done as follows: Heat salt water (that is, water containing about an ounce to the gallon) boiling hot. Dip the fruit into this, letting it remain from one to three minutes in the water. After draining a few minutes put in a pile and let it lie say two hours, when it will be ready to sack or box. This will restore its fresh appearance, making it also better for use. Even boxed fruit is improved by dampening the boxes occasionally, to keep it in good condition.

APPENDIX B.

REPORTS OF ALEXANDER CRAW,

Entomologist and Quarantine Officer of State Board of Horticulture.

To the Honorable State Board of Horticulture:

Gentlemen: The hostilities between China and Japan have checked to a great extent the arrival of plants and trees from those countries. The passenger travel has fallen off since the outbreak of the war, and consequently less plants than formerly have been brought in this way. The season for the introduction of nursery stock for commercial purposes has just opened, and the last two steamers had large invoices on board. It is gratifying to note a very great improvement in the freedom of such stock from pests and diseases.

The use of cyanide of potassium (98 per cent) for fumigating is very much more satisfactory than with the 60 per cent. I had quite frequently to order a third and even a fourth fumigation with the 60 per cent grade, before I would release the stock. The injury by the hydrocyanic acid gas to certain stock is perceptibly lessened, and only in one instance have I been compelled to order a second gasing.

The white scale that I have found at different times upon peach and plum trees from Japan, appears to be one of the most serious scale pests that attack deciduous trees. So far as I am aware this pest has not been found in the orchards of this State, but it has created alarm in the Eastern and Southern States, because of the failure of the best known washes or insecticides to kill them. Seedling peach trees in the grounds of the United States Department of Agriculture, at Washington, D. C., were found badly affected by this scale (*Diaspis lanatus*, Morgan and Cockerell) in 1892. Experiments conducted by the Department of Entomology demonstrated that it is proof against the usual strength of lime, sulphur, and salt, also the rosin solution and kerosene emulsion. Even a very strong solution of either the above well-known remedies only killed a small proportion of the pest. There is some uncertainty about the nativity of this species. A gentleman at Molino, Fla., noticed it upon some peach and plum trees received from California in February, 1888, after the trees had been planted one year. Up to June, 1893, he had no doubt that he had brought the scale from California, but during that month he found the scale eighty miles east of his place, and he was informed that no trees had been received in that vicinity from California. This would seem to settle beyond a doubt that it must have been found upon some other trees and spread to the California stock at Molino. However, I have written to the gentleman to ascertain where he purchased the trees, although I feel satisfied that he was mistaken, for such a serious pest would have been sure to have come under my notice before this if it existed in any nursery of the State. It has also been found in Georgia, and Mr. Cockerell reports it to be a very general feeder in Jamaica, and on the Island of Trinidad, West Indies, it is a serious pest. This would lead me to believe that the West Indies is not its natural habitat, and if any relief is to be obtained from natural enemies of this pest we must look to Japan for them. As Mr. Albert Koebele intends visiting Japan, in the interest of the Hawaiian Government, to look up the natural enemies of the beetle *Adoretus umbrosus*, that is doing so much damage in the vicinity of Honolulu, I will write and ask him to kindly investigate this species and its parasites in that country. This scale appears, by Professor Howard's report, to have three or four generations annually. It resembles somewhat the rose scale (*Diaspis rosæ*). The narrow white male scales usually predominate and look like fine lime on the branches. It would be well for orchardists and Quarantine Guardians of the State to make a close inspection and report any suspicious case. This scale is easily killed with hydrocyanic acid gas, and fumigation is the only method that should be used to combat it, unless where it has only a limited spread, and in this case the ax and fire are the best remedies. Specimens of imported trees infested with this scale are on exhibition in our cases.

The dangerous orange scale (*Mytilaspis gloverii*) was found on a new food plant (*Magnolia fuscata*) from Japan, on August 18th. The stem and branches were as thickly covered with this pest as I ever saw on an orange tree. This will show the danger to the citrus orchards of the State from the introduction of this pest upon ornamental stock. A section of the stem was saved as a cabinet specimen and the tree destroyed.

A lady passenger that arrived on the steamship "Belgic," August 28th, from Japan, was very indignant because I destroyed a number of crickets (*Gryllidæ*), that she brought from Japan, and intended taking to Pleasanton, Alameda County, as pets. They were very comfortably housed in an artistic split bamboo cage. She endeavored to soften my apparent lack of feeling by the statement that she had bestowed so much care upon them on the voyage by supplying them daily with fresh lettuce and other green food. But this did not save her pets, as the people of this State have no desire to experiment with such insects for the sake of their song.

On August 25th the steamship "Australia," from Honolulu, had three boxes of plants for Mrs. Garcia, of San Leandro. Three orange trees were infested with a species of *Dactylopius* that produced contortions and swellings upon the twigs, stopping their growth and causing other shoots to start below the point of attack. The trees were destroyed. Specimens of the twigs were saved.

Plants infested with insects referred to in previous reports and new to this State have been found at different times and destroyed.

Since my last report I have spent considerable time in the extensive orchards of President Cooper, at Ellwood, near Santa Barbara, and under his instructions have sent out 825 colonies of the three species of *Rhizobii—ventralis*, *debilis*, and *toowoombæ*—that have been so successful in ridding his trees of black scale. *R. ventralis* was by far the most numerous, and the colonies consisted principally of this species. The reports received indicate that the beetles had reached their destinations in nearly every case in splendid condition, and had gone to work upon the scale when liberated. As we had very favorable weather during and after the distribution, I think we will have good reports of their work. The following letter, from Mr. J. F. McIntyre, of Fillmore, Ventura County, to Mr. Cooper, dated November 6, 1894, is encouraging:

> I am very happy to be able to report that I have just found the *Rhizobius ventralis* breeding rapidly on both orange and lemon trees. One of the colonies that you sent us one year ago was placed in a clump of eighteen-year-old orange trees (with black scale) one mile from the coast, and now the trees are full of the beetles in all stages. In another place about five miles from the coast they were placed on five large lemon trees owned by one of our Supervisors, and now the scales are all gone and only a few ladybirds left. We have them now breeding on olive, apricot, orange, and lemon trees, and will soon try them on other *Lecaniums*. Ventura County legislators are strongly in favor of further appropriations to be handled by the State Board of Horticulture, to continue the search for predaceous insects.

Mr. McIntyre is a Horticultural Commissioner of Ventura County, and a very close observer of insects.

The Supervisors of San Bernardino and Los Angeles Counties, and the City Trustees of Riverside, have taken a commendable interest in the introduction of very large colonies of *Rhizobii* into their respective sections. The Supervisors of San Bernardino County telegraphed Mr. Cooper to have me meet and confer with them in regard to establishing large colonies in their county, so on September 19th I took to that county about 10,000 beetles, and the following day they were liberated in two orchards; one colony in an olive orchard at Cucamonga, and the other at Ontario, where there was an abundance of black scales (*Lecanium oleæ*). I also appeared before the Board of Supervisors of San Bernardino County, and urged upon them the advisability of relying more upon beneficial insects. I called attention to the fact that their county, a few years ago, was entirely free from black scale, and notwithstanding the fact that they had one of the most active Boards of Horticulture in the State, and that the Supervisors had been more liberal in their appropriation of funds to carry on the warfare against scale insects than any other county, yet the scale had entered the county and spread throughout the western half until to-day not an orange, lemon, or olive orchard is free from the pest in that section. This I consider a very convincing proof that with such pests as the black scale, other than artificial means must be employed to check them. The Supervisors therefore instructed the Horticultural Commissioners to leave the matter optional with the orchardists, whether they should spray, fumigate, or leave their orchards for the ladybirds. It is fully demonstrated that the ladybirds will not work in an orchard that has been sprayed, for at least a year afterwards. The Supervisors soon afterwards sent agents to Mr. Cooper's orchards, and they collected the *Rhizobii* by the thousands. Los Angeles and Riverside Counties have done likewise, so that hundreds of thousands of these beneficial insects have been distributed.

I have just been advised by Mr. John Scott, of Los Angeles, that an internal parasite has made its appearance at Pomona, preying on the larvæ of ladybirds. From specimens of the larvæ received, I have bred the parasite—a small Chalcid fly—which is entirely new to California. I was in hopes that it was nothing more serious than Prof. L. O. Howard's species, *Homalotylus obscurus*, that is found in Florida, parasitic upon the larvæ of the convergent ladybird (*Hippodamia convergus*), but it differs from that. This parasite may check, to some extent, the usefulness of ladybirds in California, as their work will not be so rapid. I have written to Mr. Scott to ascertain if any one at Pomona had sent direct to Australia for ladybirds, as it is known that an internal parasite is common there. The beetles are not subject to the attacks of the parasite.

I received an application for a colony of *Novius Koebelei* from the Department of Agriculture of the Cape of Good Hope, South Africa, and forwarded them on August 18th, and have recently received a letter from the Hon. Sydney Cowper, acknowledging receipt thereof and stating that a number had arrived in good condition, also that several larvæ had hatched out.

Colonies of this beneficial insect have also been asked for by planters in Samoa, also by the Hon. J. Marsden, Commissioner of Agriculture of Hawaii, which have been forwarded to them.

I have to acknowledge the receipt of a colony of ladybirds (*Chryptolæmus montrouzieri*, Muls.), from Mr. Marsden. This ladybird is one of the most effective enemies of mealy bugs (*Dactylopius*). As soon as they increase a colony will be placed upon a plantation of *Phormium tenax* infested with this pest in the University grounds at Berkeley. An orange grove in Los Angeles County is also infested with this pest, and a colony will be sent to check it.

The minute ladybird (*Scymnus nanus*) which I referred to in my last report as having discovered at Rivera, Los Angeles County, feeding upon red spiders, I think will prove of great value in checking this pest, and would recommend that colonies be sent next season wherever this pest is found in the State. Commissioner Scott has forwarded me several colonies, one of which was sent to Mr. Marsden—he having made application to me for same—to check the red spider in the coffee plantations of the Hawaiian Islands, and the others were liberated in Alameda County.

The *Vedalia cardinalis* and *Novius Koebelei* we breed in the office and have them constantly ready for distribution. The former are "city bred" for at least thirty generations, as they have been propagated for over three years indoors, and the beetles are as well developed and the larvæ as voracious as the original colony, and do their work as effectively when liberated in an infested orchard.

As the majority of the colonies of ladybirds are sent by mail, and having had one box returned, I inquired into the matter and learned that there is a postal regulation restricting the transmission of live insects through the mails, to queen bees. As our new mailing boxes are stamped with the words: "Beneficial Insects, from the State Board of Horticulture, 220 Sutter Street, San Francisco, Cal.," I saw that it was a direct notification to the postal authorities of the violation of the law, so in June I submitted the matter to our local officials, with samples of our mailing boxes, together with the reports of the Board covering the subject, which were forwarded to the Postmaster-General, and the following notice was subsequently issued to all Postmasters:

POST OFFICE DEPARTMENT,
WASHINGTON, D. C., July 12, 1894.

[Order No. 247.]

Section 322, Postal Laws and Regulations 1893, is hereby modified so as to admit to the mails, alive, an insect known as the "Australian Ladybird." This insect has been introduced into this country from Australia by fruit growers for the purpose of clearing scale insects from fruit trees, and it is reported has proved a very effective remedy for that great scourge to fruit trees.

W. S. BISSELL,
Postmaster-General.

The following gentlemen visited Ellwood during September and collected the new *Rhizobii* ladybirds and sent them to their respective sections: Prof. A. J. Cook, Claremont; Messrs. Loney, Messenger, Howland, and Packard, of Pomona; Messrs. Pease and Gray, for San Bernardino County; Dr. Woodbridge, for Los Angeles; Messrs. H. K. Snow and Thomas, for Orange; and Messrs. McIntyre and Rice, for Ventura County. Other parties visited Mr. Cooper's orchards and collected for a few days. Prof. T. N. Snow, of Santa Barbara, collected great numbers for Los Angeles and Riverside Counties as well as for his own. Besides the 825 colonies sent by mail, I forwarded very large colonies to Los Angeles, San Bernardino, Riverside, Orange, and San Diego Counties by express. In all, I estimate that there has been over 1,000,000 beetles collected and distributed from the Ellwood orchards. With each colony sent, the following circular letter was mailed:

ELLWOOD, SANTA BARBARA CO., CAL., ———, 189–.

Mr. ——— ———.

I send you by this mail a package containing a colony of ladybirds (*Rhizobius ventralis*). A few of these beetles, probably not more than ten perfect pairs, were placed in olive orchards badly infected with black scale (*Lecanium oleæ*) on May 15, 1892. In September, 1893, they had increased to many millions. The orchards at this writing are entirely free from scale insects. Over 500 colonies were sent out last fall. Reports from some who received them are very encouraging and satisfactory, while from others no apparent benefit has been derived—statements are made that no ladybirds or their larvæ can be found.

I have visited a number of orchards where colonies were placed and have made this observation: that in every case where there were good-sized trees, very bushy, offering protection to the beetles, and where there were plenty of scales, good work had been accomplished. The beetles and larvæ in all stages were plentiful on the surrounding trees, so that this summer the parasites will surely complete the destruction of the pests.

In orchards where the trees were small and very open, it had not been so successful—but few beetles or larvæ could be found, and there was not much hope of success. Therefore, you will place this colony on a tree very dense in foliage, where there are plenty of scales, and no spraying or fumigating must be done in the orchard.

You will report to the Secretary of the State Board of Horticulture, 220 Sutter Street, San Francisco, not later than July 1, 1895, stating the progress and increase of these beetles.

Please acknowledge receipt to Ellwood Cooper, Santa Barbara.

I am, very truly,

ELLWOOD COOPER.

During October I visited Yolo County and inspected a number of pear orchards in the vicinity of Yolo that are infested with a new aphis attacking the roots. It appears to be a species of *Schizoneura*. This insect was found upon French pear seedlings imported for grafting purposes in 1892, and all the Horticultural Commissioners in the State were notified at that time to have all such stock dipped in a solution of whale-oil soap, one pound to three gallons of water.

With Mr. Zane I visited a fourteen-acre Bartlett pear orchard eight years old. In the spring the trees in this orchard set a good crop, but when the fruit was half size it stopped growing and had to be fed to hogs. Upon examination the roots were found to be infested with this aphis. The pest was undoubtedly upon the roots when the trees were planted, as there are no pear trees in the immediate vicinity. Experiments conducted by Mr. Zane in another orchard upon three-year-old trees would lead me to believe that this is a difficult pest to combat. The gas-lime treatment recommended for woolly aphis appeared to have no effect. Where several trees had been taken up the soil was removed and fresh material, mixed with gas-lime, substituted. Healthy trees were planted the following spring, and these were dug up during my visit and found to be seriously infested. A number of trees were treated by Mr. Zane last spring with the rosin solution, as recommended for winter use. He had the surface soil removed and poured five gallons of the solution around each three-year-old tree. Most of the trees so treated made a very good growth, but upon examination we found a few aphis on the roots of most of the trees. Of course this treatment would not be practicable upon old bearing trees. Irrigation or submersion will be of no use, as one of the orchards during high water last winter was overflowed for over three days, and during my visit we found the roots infested. I failed to find any trace of them on the branches. It appears to be entirely subterraneous. The aphis is very slightly covered with wool and not as broad as the apple form.

Trees for new orchards and nursery stock should be carefully inspected and dipped in whale-oil soap solution, as suggested above. The principal point of attack is the small fibrous roots, which they destroy. They also collect on the under side of the large roots near the stem and at the junction of the lateral roots. No swelling is produced by their attacks. This appears to be a serious pest, and will receive attention during the coming season.

I desire to thank the officers of the Customs, Surveyor, Naval, and Appraiser's departments of San Francisco, also the officials of the different docks, for their valuable aid and assistance in my quarantine duties.

Respectfully submitted.

ALEXANDER CRAW,
Quarantine Officer and Entomologist.

November 17, 1894.

BENEFICIAL INSECTS.

REPORT ON THE COLONIZATION IN THIS STATE OF PARASITES AND BENEFICIAL INSECTS, PARTICULARLY THE AUSTRALIAN LADYBUG, RHIZOBIUS VENTRALIS.

To Hon. Ellwood Cooper, *President, and the Honorable State Board of Horticulture:*

Gentlemen: Under your instructions, I visited the various counties and made an examination of a number of orchards where colonies of the "black ladybird" (*Rhizobius ventralis*) were placed, and herewith submit my report.

Considering the season of the year and the condition of the weather just previous to the examination, I believe we can look for good results during the coming summer, when the weather will be more propitious. In your own experience, with the original colony of this ladybird, it was over a year before they increased in numbers, and about seventeen months before you sent out colonies. As you are aware, a number of very strong colonies were liberated around Pomona in the latter part of last September and early in October.

On December 11th, in company with John Scott, County Horticultural Commissioner, and Inspector James Loney, I inspected several orchards in Pomona, which showed indifferent but not discouraging results, for in most instances the trees are very large and the plantations are extensive, so that even if 1,000,000 winged beetles had been liberated, it would be difficult to find them even a few days later. In all places visited we found evidence of the beetles or larvæ and a cleaner condition of the trees. In Mr. Packard's olive orchard the beetles and larvæ had spread from the tree where the colony was placed. Here we found larvæ of various sizes, from very small to fully developed specimens about ready to change into chrysalis. At Mr. Alfred Wright's olive orchard we found beetles and larvæ of *Rhizobius ventralis;* also a few larvæ of *Rhizobius debilis.* The black scale had done considerable injury to the small inside twigs, but is not so plentiful now. Mr. Loney reported to me that the *Rhizobius ventralis* larvæ were numerous in this orchard about one month previously. It was from this orchard that Mr. Scott sent the parasitized ladybird larvæ, that I reported to you on November 9th. After an examination of the orchard, I feel convinced that they are the young of *Exochomus*, and not *ventralis*, because the larvæ are only found attached to the trunks and under sides of the branches, a position that the latter species, even when very numerous in your orchards, never selected. At this and a subsequent visit to Mr. Wright's orchard I collected the larvæ of the *Rhizobius ventralis* in order to determine if they, too, are subject to the attack of internal parasites, but as yet there is no indication that such is the case. I will raise them until they pass through the larval form. The mature beetle is not subject to the attack of this internal parasite, so I will secure larvæ of the *Rhizobius ventralis* at different seasons in order to fully determine if they are parasitized.

On December 12th, with Messrs. Collins and Muscott, Horticultural Commissioners of San Bernardino County, I visited the olive orchard of Supervisor I. W. Lord, at Cucamonga, where I placed a colony of nearly 5,000 beetles on September 20th last. This orchard was in a very serious condition when the ladybirds were liberated, nearly every leaf was covered with young black scale, and it appeared to be a very desirable location for a strong colony. During our examination a strong wind prevailed and our search was not very successful, but an inspection of the trees revealed the fact that hardly a scale remained alive. At the time that this colony was placed, another of about 5,000 beetles was put in the Dwinelle olive orchard at the head of Euclid Avenue, North Ontario. This orchard was in a more serious condition than Mr. Lord's, but at the present is as free from live scales.

At Mr. W. C. Farlow's orange grove in North Ontario, where colonies of the *Rhizobius ventralis* were placed last fall, we could find very little scale. This orchard had also been very badly infested. Mr. Collins believes that the freedom of those orchards from scale must be attributed to heat after the young scales hatched, but it is a fact that we have had no hot days since the ladybirds were liberated. A temperature of 105° to 110° is necessary to kill the larvæ of the black scale. As the scale is alive in several orchards at Ontario, Pomona, and Riverside, where the climatic conditions were unquestionably similar, to some other cause than heat is attributable the disappearance of the scale in those orchards. It is claimed that several other orchards are equally free that were formerly infested with scale and where no ladybirds were placed; but the fact that none were put in these orchards does not prove that they did not reach there themselves. In a former report I called attention to the fact that I found the larvæ of *Rhizobius ventralis* at least one mile in a direct line from where a colony was turned out, a low range of hills intervening in this instance. Inspectors Loney and Pease each called my attention to orange trees containing beetles and larvæ, one orchard in Pomona and the other across the line in San Bernardino County.

A colony of *Rhizobius ventralis* was placed in the Centenella orchard at Inglewood, on September 23d, and upon examination of the trees December 14th, I found larvæ from very small to nearly full grown.

I visited San Diego on the 17th and 18th of December, and with W. R. Gunnis, County Horticultural Commissioner, inspected several places where colonies were put. The ladybirds have got a start here and several orchards show their good work. The home orchard of Hon. Frank A. Kimball, that was so seriously infested one year ago, is now clean and Mr. Kimball has distributed a great many colonies of ladybirds to his neighbors. We visited an olive orchard about three miles from Mr. Kimball's, where Mr. Gunnis placed a strong colony about six days previously. The twigs of these trees as well as the leaves were completely covered with young black scales. This will be a good orchard in which to collect ladybirds the coming summer, as there is an abundance of food for them.

On December 23d I visited an orange orchard in Ventura County with J. F. McIntyre, County Horticultural Commissioner. A colony of *Rhizobius ventralis* was placed in this orchard in October, 1893, and no trace of them could be found for over a year, when they showed up, and on my visit the larvæ as well as beetles were plentiful, besides a few *Rhizobius debilis*. Mr. McIntyre reports the beetles and larvæ as numerous in more interior districts upon lemon, apricot, and olive trees.

On December 26th, with Judson House, County Horticultural Commissioner, I inspected an orchard at Riverside, where I liberated a colony of *Rhizobius ventralis* on September 21st, and found the larvæ in various stages and on a number of trees away from where the colony was placed.

The orchards of M. C. Heminway and Chas. R. Hails, near Goleta, Santa Barbara County, were colonized in September, 1893, and during September and October, 1894, Prof. T. N. Snow, of Santa Barbara, collected from these and adjoining orchards thousands of these beneficial insects and distributed them throughout his county and also sent several large colonies to other districts. At present these orchards are free from scale.

Your own orchards are the most convincing proof of the great value of these ladybirds. The constant warfare against the scale, representing an annual expenditure of from $3,000 to $5,000 in your orchards alone, is now saved and your trees already show increased vigor. During the time I collected the *Rhizobius ventralis* in your orchard, the beetles were as plentiful as I ever saw the *Vedalia cardinalis* when the cottony cushion scale was being suppressed by that beetle. Over 1,000,000 *Rhizobii* have been collected in your orchards and distributed throughout the State, which will in a short time save thousands of dollars to the orchardists, besides increasing the vigor and productiveness of their trees.

I also examined the "steel-blue ladybird" (*Orcus chalybeus*) colony at Los Angeles. While this ladybird does not increase as rapidly, nevertheless it has done very good work. The lemon and orange trees where they were placed now present a very marked improvement in growth and freedom from red scale. The beetles appear to be as plentiful in an adjoining orchard. The months of June and July are when this beetle shows up in greatest numbers. I would advise that they be not disturbed for at least another season.

Respectfully submitted.

ALEXANDER CRAW,
Quarantine Officer and Entomologist.

APPENDIX C.

REPORTS OF COUNTY HORTICULTURAL COMMISSIONERS.

BUTTE COUNTY.

Chico, October 13, 1894.

To the Honorable State Board of Horticulture:

Gentlemen: As the time has come around once more when we are to report to you the work we have done as County Horticultural Commissioners, and the condition of all things pertaining to horticultural interests, I beg leave to submit the following report from the Chico section of Butte County:

During last fall and winter I visited nearly every orchard as well as town lot where there were fruit trees of any kind in my part of the county, and some of the most thorough work was done in eradicating the pernicious scale that has ever been accomplished in the county. In a few cases parties promised to spray, but did not do it, and when I got around to do the spraying for them the buds were so far advanced that I did not think it safe to do it. The fruit trees about town, and there are lots of them, were very badly affected with pernicious scale, but in nearly every case the owner cut down and burned or had them sprayed. In three yards I found yellow scale on orange trees. They were all sprayed with lime, sulphur, and salt or I X L, without injury to the foliage. I warned the parties that there was danger of losing the leaves, but they said they would kill the scale if they had to kill the trees to do it. I found black scale on two lots of olive trees shipped here from the southern part of the State. They were all sprayed or dipped and are now clean. The nurserymen of this county have used great care with their stock and it has been found very clean; all trees showing any signs of root knot have been burned. One large lot of trees shipped here was badly affected with knot, especially prune on Myrobalan root. I have heard it said that the root knot would not appear on Myrobalan root, but some of the worst knots I ever saw were on this lot. After Mr. Craw's discovery of the pear leaf blister mite, I found that we had quite a sprinkling of it here, and I am convinced that we have had it here for a long time. Nothing has been done for it here.

Some trees are dying every year from the oak root fungus, and when a tree dies there is no use putting in a peach, plum, apricot, or prune, but thus far I have not found any effect on pear, so whenever I lose a tree I am filling up with pear and advising others to do the same. The southern vine disease has taken nearly all of the Mission and Rose of Peru grapes, and the Tokay and Muscat are beginning to show that it has got hold of them. The spots are not quite as bright as they are on the cuts I have seen, still they are quite distinct.

The red spider has got in its work and left many half-stripped trees, where they have not dusted with sulphur.

In many orchards where spraying had not been done I found a large increase of scale, showing whatever had been working on them during the last two or three years had not kept up the work, or had lost their appetite for scale.

Yours, G. M. GRAY.

PALERMO, October 29, 1894.

To the Honorable State Board of Horticulture:

GENTLEMEN: I herewith forward to you my report of work as Horticultural Commissioner of the district lying east of the Feather River, in Butte County.

There have been inspected one hundred and ninety orchards, and sixty-four were found infested with pernicious scale. The most of them were sprayed with lime, sulphur, and salt. Those that had been sprayed the year before showed a decrease of scale, but were sprayed again this year.

In Oroville two hundred and nineteen places set to citrus fruit trees were inspected; one hundred and ninety were found to be infested with soft brown orange scale; forty with yellow, and three with black scale. The yellow and brown scales are on the increase.

At Palermo the brown scale is all that is troubling the citrus trees. Most of the groves were sprayed last spring with whale-oil soap. There was one case of orange trees from Florida received at Palermo, infested with purple scale. These were quarantined and gased until all the eggs of the scale were destroyed.

Some orange trees were received from the southern counties, with live black scale. They were held, and disinfected, and watched until all scale and eggs were dead.

In one consignment of deciduous trees from Oregon, the peach stock was infested with Eastern peach-root borer; all were burned.

On nearly all shipments of deciduous trees received in this district root knot was found to a greater or less extent; all trees thus affected were destroyed.

The pear leaf blister mite, a new pest, made its appearance here last spring upon pear trees. Dry sulphur was used, but I am not able to report the result of its use.

Respectfully submitted.

EBEN BOALT,
Horticultural Commissioner.

SAN DIEGO COUNTY.

To the Honorable State Board of Horticulture:

GENTLEMEN: We present you herewith a partial report of the condition of the fruit interests of this county, with partial statistics.

It is probable that high-water mark in tree planting in this county was reached last year, as indicated by the enormous area of 2,390 acres having been planted during the one season alone in District No. 1 of this county, against a little over 4,000 acres altogether, previously planted. Yet a large acreage has been planted during the present year, especially near Escondido. The new plantations have been well divided between citrus and deciduous and the olive, the prune and peach taking preference among the deciduous. Excepting in the mountain regions, the fruit crop has been especially fruitful, and the proceeds so satisfactory that a new impetus will be given to the planting of this fruit so well suited to this portion of the State. For the first time in many years our mountain districts have suffered almost an entire failure of nearly all kinds of fruits, caused by a heavy frost in April. This calamity so considered, however, may have the mitigating feature of being a means of subduing the codlin moth, should it gain a footing in these fine apple orchards. This, however, we are trying hard to prevent by a persistent use of the best means known to us. In sections where there is a *fighting chance* for success orchardists are required to spray the infected orchards three times during the early part of the season with a solution of Paris green, and to place bands of burlap or grain sack on the trunks of the trees, which bands are to be taken off, examined, and returned once every week; also to hand-pick all infected fruit once in ten days. These have proved very effectual measures, where well enforced, so that now many orchards appear to be already free from the pest.

We aim by every stringent quarantine regulation to exclude all infested fruit from our market. During the year hundreds of boxes of fruit have been destroyed and thousands of boxes fumigated. This tends to deter shipments of poor or infected fruit, thus giving clean fruit the first chance and growers living prices. This has already awakened a new interest, especially in apple growing, to which so much of our county is admirably suited, and stimulated new plantations of the apple as a fruit for profit. We, however, are confronted by another enemy to the apple in our mountain districts—the "apple tree mildew," which made its appearance about four years ago on trees near Banner, in the Julian district. The next year it made its appearance in several other orchards in various parts of the district, and in the following year it became quite prevalent all over that region, also appearing on the older orchards on Smith's Mountain, twenty-five miles from Julian. The disease attacks the new wood, curling the leaves, and giving both the appearance of being covered with a heavy white frost. The growth is almost entirely arrested, and the new wood finally turns black in places and the leaves become dry, crumbling to a powder when rubbed in the hand. In the orchards on Smith's Mountain it is noticed that the disease has spread to adjoining peach trees, affecting them the same as the apple tree. It is also noticed that the young growth of the native oak is affected with the same or similar fungus, which may indicate that it is native to those regions. Professor Pierce, the Government expert at Santa Ana, has examined specimens sent him and prescribed remedies, none of which have proved effective and economic enough to be available in large orchards. The orchardists of the Julian district were much alarmed at the threatening character of this disease, but this alarm has much subsided, since it has thus far only slightly crippled the tree in the new growth, and also because the attack has been much less severe this year than formerly. The lowest altitude known by us to be infested is about 2,500 feet above sea-level. It is also noticeable that some varieties of apple have almost entire immunity from the disease, the Bellflower and White Winter Pearmain being among the first, while the Ben Davis suffers very badly.

Of all the insect pests found in the State, there are but few that have not been found in this county, though some have not become widely disseminated. The red orange scale (*A. aurantii*) has never gained much footing and we believe is now extinct. The Glover scale (*M. Gloverii*) has been found at different times and places, but has been attacked so vigorously that we believe this, too, is extinct; so also with the black peach aphis (*Persica niger*), which was found in two places in the bay region. The destructive mealy bug (*D. destructor*) at one time became so numerous and destructive as to require very radical measures for its suppression, which we believe were in a high degree successful. The purple scale (*M. citricola*) had become widely disseminated over the county before the present commission was appointed, and notwithstanding the vigorous war waged against it since our appointment, it is still to be found in several places in the county. Commissioner Gunnis, of this Board, has found the *Rhizobius ventralis* feeding on this pest, also the *A. rapax* quite often in orchards adjacent to the city. This is also reported by deputy Adams. The three successive years of low summer temperature have proved very favorable to the development of the black scale (*L. oleæ*), which with the San José (*A. pernicious*) are probably our worst pests. The first we have hopes of subduing by the introduction of the *Rhizobius*, though no very flattering results have yet been noted from its introduction last year. But both the black and San José scales are being successfully combatted with the gas process. We are using C. P. cyanide (98° test) with better results than the 58°, and are able to use it at any time when there is no wind, without injury to the tree. The San José scale appears to be vigorous and aggressive in many sections of the county, but in others is giving way under attacks by some parasitic disease or insect. In fumigating apples infected with this pest, we seem to have demonstrated that the larvæ of the codlin moth may also be destroyed by this process while in the apple. The cottony cushion scale is still here, and so too is the *Vedalia cardinalis*, which now appears to be so entirely at home and so well disseminated as to need no fostering care as formerly.

In District No. 1 the lemon is far in advance of all other fruits in point of acreage, with large plantings for the present year. During the year eighty-four carloads of this fruit have been shipped. Experiments have also been made by this Commission in the manufacture of citric acid and lemon oil. These experiments were successful in a high degree, showing that even the culls may thus be made a source of revenue and profit to the grower.

In District No. 2 the grape, olive, and orange lead in the lowlands, with the apple largely predominating in the mountain regions.

District No. 3 is much diversified, the lemon and olive probably taking first place, with the apple first in the mountain section.

Statistical Report of Orchards in Districts 1 and 2 of San Diego County.

Variety.	Number of Acres.			
	Bearing.	Non-bearing.	Total.	Plant of 1894.
Apple	807	122	929	50
Apricot	140	32	172	9
Cherry	15	70	85	22
Fig	158	58	216	26
Lemon	2,260	3,519	5,779	950
Orange	930	960	1,890	250
Olive	200	242	442	46
Pear	103	88	191	23
Peach	573	397	970	86
Prune and Plum	151	355	506	98
Miscellaneous fruits	75	23	98	8
Grapes	3,914	64	3,978	60
Nuts	19	148	167	38
Total	9,345	6,078	15,433	1,666

Nursery stock—number of trees	1,829,602
Seed-bed stock, about	594,000
Trees fumigated	1,620
Otherwise disinfected	1,800
Total	3,420

JUDSON WILLIAMS,
Secretary of County Board.

San Diego, Cal., September 29, 1894.

RIVERSIDE COUNTY.

To the Honorable State Board of Horticulture:

Gentlemen: The County Board of Horticultural Commissioners respectfully submits its annual report of work done and the condition of the orchards of Riverside County.

The following table of orchard trees will clearly show the fruit industry to be the chief one of the county:

Kind of Trees.	Bearing.	Non-bearing.	Total.
Apple	2,473	5,099	7,572
Apricot	29,950	49,976	79,926
Cherry	1,144	2,978	4,122
Fig	2,944	3,582	6,526
Olive	1,606	33,531	35,137
Peach	33,229	67,817	101,046
Pear	14,187	11,741	25,928
Prune	21,276	141,718	162,994
Lemon	3,340	24,930	28,270
Orange	376,452	639,035	1,015,487
Almond	3,937	24,136	28,073
Walnut	299	2,794	3,093
Unclassified	11,017	21,332	32,349
Totals	501,854	1,028,669	1,530,523

The important change in the relative condition of the scale pests has been the entire eradication of the cottony cushion scale by the *Vedalia cardinalis*, and the rapid increase of the black scale, till its prevalence is a commercial question in the marketing of oranges. The various *Rhizobii* have been colonized, and although it is too soon to report results, much is confidently hoped from their depredations upon the black scale.

Red and yellow scales have not increased, but it has cost much money for inspection and fumigation to thus control them.

Pernicious and soft brown scales need occasional attention, but parasites prevent them from doing any widespread damage.

A small beetle, *Serica fimbriata*, appeared in some localities last spring and denuded young deciduous trees of buds and leaves.

While insect pests are numerous in variety, they have been prevented from doing material damage. This result has been accomplished by rigid inspection and quarantine, thus destroying many pests before they had time to colonize largely. The orchardists of this county clean their trees of pests, when discovered, as faithfully as they cultivate or irrigate, realizing the equal necessity.

The fruit industry of this locality will continue to increase, as the natural conditions are exceptionally favorable. Several large irrigation and land projects have been reorganized recently. Business methods and moderate prices have been adopted in place of boom extravagance. The same conservative influence is felt throughout the county, and prosperity for the many individual orchardists is assured. The best results will be obtained through an extension of the present plan of coöperative marketing of fruits.

CHARLES W. GODFREY,
Secretary.

MORENO, November 21, 1894.

ALAMEDA COUNTY.

To the Honorable State Board of Horticulture:

GENTLEMEN: In this neighborhood the past year has been to the orchardists, like its predecessors, a constant worry and annoyance in trying to fight the black and brown scales. The washes used have not brought out satisfactory results; that is, when we estimate the cost of the work and the number of scale left after spraying.

Considering the price of fruit the cost of spraying has proved to be quite an item in computing the annual profits, so much so that it has quite a discouraging effect on the orchardists. But it is hoped that the introduction of the *Rhizobius ventralis*, of which several colonies have been received from Mr. Ellwood Cooper, of Santa Barbara, and been distributed in this neighborhood, may in time rid the orchards of these pests.

In the eastern side of this county the black or brown scale does not thrive, owing no doubt to altitude. The plum aphis has troubled the orchards to some extent the past year. In some small young orchards in the cañon near Sunol, the brown apricot scale has made its appearance the past year, but as the trees are young it will not be much of an undertaking to destroy them.

Respectfully yours,

WM. BARRY,
Horticultural Commissioner.

NILES, November 26, 1894.

FRESNO COUNTY.

To the Honorable State Board of Horticulture:

Gentlemen: We note with pleasure the cheerfulness displayed on the part of orchardists in Fresno County to comply with the law in reference to the destruction of orchard pests. The work of 1892 and 1893, through the labors of the Board of Horticultural Commissioners of Fresno County, and the mutual aid of the orchardists generally, has proved very effective in eradicating the San José scale, which at one time bid fair to destroy almost the entire fruit interests of our county. We find that frequently one thorough spraying of the sulphur, lime, and salt mixture has proved sufficient to dispose of all scale, but a second application a year later, when the work was well done, has in almost every case under our observation left the trees clean and entirely free from scale.

Many of our orchardists are apprehensive of danger from the dread disease known as "yellows," which exists in many of the Eastern States and from whence fruit trees are liable to be shipped into our midst. We believe our only safeguard to be the complete exclusion from our State of all Eastern-grown peach trees or stock grown upon peach roots.

Root knot is also becoming quite a serious trouble, even upon our home-grown trees. This commission has condemned, on account of root knot, quite a large number of trees shipped into Fresno County from various portions of the State, and we believe that unless nurserymen inspect their stock more carefully and cease to send out such trees for planting, Horticultural Commissioners generally should condemn all lots or invoices of trees containing any root knot whatever.

Fresno County has a Board of three Horticultural Commissioners, and they have divided the county into three districts, each one looking especially after his own territory, although authorized to act anywhere within the county if necessary.

The total number of orchards inspected this year in Fresno County is 635, containing 636,750 trees, of which 330 orchards, containing 260,750 trees, were found to be infected with pernicious scale, and 315 orchards, containing 376,000 trees, were found to be clean; most of the latter were young trees. We have received from counties within the State 104,500 trees; of this number a few hundred olive trees were returned on account of scale. Also received into this county from France about 500,000 pear stocks and ornamental shrubs. This commission has also inspected 375,000 home-grown trees and 400,000 home-grown vines, mostly free from disease and of healthy, vigorous growth. Total number of trees inspected, home-grown and from other sources, 1,011,000.

Very respectfully,

J. R. BAIRD,
President Fresno County Board of Horticultural Commissioners.

TULARE COUNTY.

To the Honorable State Board of Horticulture:

Gentlemen: I herewith submit the following for the year 1894 as my report from Porterville district:

During the past year there were planted at Porterville about one hundred acres of orange and lemon trees, all of which have made a fair growth. Our foothill land about Porterville seems to be especially adapted to the orange and lemon, producing a fine quality as well as a remarkable growth of trees. We have already this year marketed about twenty-five carloads of our crop, demonstrating the fact that we are much earlier than some other portions of the State, which gives this vicinity a decided advantage over other localities. We have no insect pests to contend with as to citrus trees. Last year there was one car of orange and lemon trees shipped from Florida that was slightly infested with purple scale. Said car of trees before being released was quarantined and treated as the law required.

The citrus colony at Lindsay is certainly worthy of mention, not alone from a horticultural standpoint, but as an object-lesson, showing what determination and perseverance, under apparently the most adverse circumstances, can accomplish. In 1890 the Lindsay Land Company commenced the planting of their experimental farm, which consisted of some ten acres of deciduous trees of nearly all varieties and about twenty lemon trees and two hundred orange trees. The company proposed bringing a ditch from the Kaweah River onto the land. Awaiting the construction of this ditch they pumped water enough from the house well for the citrus trees, and by constant cultivation raised all varieties of deciduous trees to bearing without other irrigation. Opposition from land owners caused so much delay that the company set to work systematically hunting for the water which they felt existed under the surface, and they now have eleven hundred acres under one of the most perfect irrigation systems in the State. Last season was a very dry one and there was not a time that there was not an abundant supply of water for the six hundred acres now planted, and that by pumping but one well during the daytime only. The trees on the experimental farm are hard to equal. Lemon trees have grown best, running up nearly fifteen or twenty feet in height and laden with fruit. The orange trees similarly grown had a mass of nearly ripe fruit on the last of November. There can now be seen nearly one thousand acres of land planted to oranges and lemons.

I nearly omitted to mention the nursery of eight thousand young lemon trees budded last fall. The nursery alone is worthy a trip to see. I was also much surprised to see some limes which were budded at the same time. I am informed no protection has been given to anything.

Respectfully submitted.

R. H. McDONALD,
Horticultural Commissioner.

Porterville, December 26, 1894.

LAKE COUNTY.

To the Honorable State Board of Horticulture:

Gentlemen: I send you a report of the results of one year's labors as Horticultural Commissioner. Last winter I sprayed several orchards that were about ruined by San José scale. Now the owners meet you with a hearty welcome and say, "You have brought relief to my orchard; come again this winter and make a final job of it."

The Lake County Commission had quite a debate on the feasibility of spraying apple trees with Paris green. They did not spray, but I did. I sprayed a number of large orchards, others bought sprays and did their own work. All are highly pleased with the results, as the moths are very few this fall, while some orchards that were not sprayed are almost a total loss. I am already engaged to spray apple orchards next spring. I sprayed several pear orchards for cut-worms and slugs, destroying the same instantly. There are many old orchards here owned by parties not living in the county; these are rented by parties that take no interest in them. Between the owners and renters they make every effort to baffle me, but I intend to be more strict in the future so long as I am doing good.

Yours,

S. GRAHAM,
Horticultural Commissioner District No. 1, Lake County.

TEHAMA COUNTY.

To the Honorable State Board of Horticulture:

Gentlemen: I have the honor to submit herewith my annual report as Horticultural Commissioner of Tehama County for the year 1894.

A great deal of interest in the way of planting orchards in the last year has been manifested, and a decided improvement in the condition of orchards all over the county in the last two years is reported. Having examined orchards all over the county, I find all varieties of scale disappearing, from some cause unknown to me. This summer I discovered some ladybirds, but not sufficient in number to do the work. The codlin and peach moths, red spider, and yellow mite are taking a strong hold in the county, but orchardists all over the county are making preparations to disinfect their trees. The spraying throughout the county is principally done with the salt, sulphur, and lime with beneficial results. In my own experiments I have found no remedy to excel it for scale insects. The climate and altitude of the county are such as to produce all varieties of deciduous fruits, as well as oranges and lemons.

The Sacramento River forms the county boundary, and the valley is bounded on the east by the Sierra Nevada and on the west by the Coast Range mountains. The water supply cannot be excelled; it is sufficient to irrigate all the valuable land.

The fruit industry in the county has brightened very much during the last two years, and it will not be long before this county will be numbered among the more important fruit-producing counties of California. All nursery stock imported into the county last planting season I found clean of all diseases and insect pests.

Yours truly,

EZRA CROTZER,
Red Bluff.

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